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UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable YVONNE GONZALEZ ROGERS, Judge

EPIC GAMES, INC.,)	
)	
Plaintiff,)	NO. C-20-5640 YGR
)	
vs.)	Tuesday, May 11, 2021
)	
APPLE, INC.,)	Oakland, California
)	
Defendant.)	BENCH TRIAL
)	
APPLE, INC.,)	
)	
Counterclaimant,)	
vs.)	
)	
EPIC GAMES, Inc.,)	
)	
Counter-Defendant.)	
)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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(Appearances continued.)

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TRANSCRIPT PRODUCED BY COMPUTER-AIDED TRANSCRIPTION

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TUESDAY, MAY 11, 2021

7:59 a.m.

P R O C E E D I N G S

THE CLERK: Calling CV 20-5640, Epic Games, Inc., vs. Apple, Inc.

Counsel, please state your appearances.

MS. FORREST: Good morning, Your Honor. Katherine Forrest for Epic.

THE CLERK: Hold on. I will turn on the mics on the table. All the mics are on.

THE COURT: All right. Good morning, Ms. Forrest.

MR. BORNSTEIN: Good morning, Your Honor. Gary Bornstein for Epic.

THE COURT: Good morning.

MS. KLOSS: Good morning, Your Honor. Lauren Kloss for Epic Games.

THE COURT: Ms. Kloss, next time into the mic.

MS. KLOSS: Will do, Your Honor.

THE COURT: That was Lauren Kloss. And?

MS. GREENFIELD: Good morning, Your Honor. Jill Greenfield for Epic Games.

THE COURT: Say that again.

MS. GREENFIELD: Good morning, Your Honor. Jill Greenfield for Epic Games.

THE COURT: Okay. So this is your first time appearing here; right?

Who will be the next witness up, Ms. Forrest?

MS. FORREST: Your Honor, our next witness will be Dr. Susan Athey.

THE COURT: Okay. We will do Dr. Athey after our second break, so we'll stand in recess until 1:15. Thank you.

(Recess taken at 12:33 p.m.; resumed at 1:15 p.m.)

THE COURT: Okay. We are back on the record. The record will reflect the parties are present.

Counsel, your next witness.

MR. EVEN: Thank you, Your Honor. Yonatan Even for Epic Games. Epic Games at this time calls Professor Susan Athey to the stand.

THE COURT: All right.

MR. EVEN: Thank you very much.

THE CLERK: I will have you stand up and I'll swear you in.

(**SUSAN ATHEY**, called as a witness for the Plaintiff, having been duly sworn, testified as follows:)

THE WITNESS: I do.

THE CLERK: All right. Please be seated.

And then if you will get your mask on. If you will adjust the mic so that it's -- yeah, kind of goes underneath your shield there.

All right. And then please state your full name and spell

ATHEY - DIRECT / EVEN

your last name. And let me turn on your microphone.

THE WITNESS: Susan Carleton Athey. It's A-T-H-E-Y.

THE COURT: Good afternoon.

THE WITNESS: Good afternoon.

THE COURT: You may proceed.

MR. EVEN: Thank you, Your Honor.

DIRECT EXAMINATION

BY MR. EVEN:

Q. Good afternoon, Professor Athey.

Before we get into your direct examination, you provided a written -- a written portion of your testimony in this case?

A. I have.

MR. EVEN: Your Honor, may I approach?

THE COURT: You may.

MR. EVEN: Thank you, Your Honor.

BY MR. EVEN:

Q. Professor Athey, if you turn to the first tab in the binder I just handed you. And behind it is -- if you can confirm -- is what seems like a true and correct copy of your written direct testimony?

A. It is.

MR. EVEN: Your Honor, at this time, we ask to move Professor Athey's direct testimony into evidence.

THE COURT: All right. The -- any objections or anything -- everything has been resolved; is that correct?

MR. EVEN: I believe so, Your Honor.

MS. DUNN: Your Honor, same objection as --

THE CLERK: Let me turn on the mic.

MS. DUNN: Your Honor, same objection as yesterday with Dr. Evans, just to whether there will ultimately be a factual basis for the opinions. Otherwise, all other issues have been resolved.

THE COURT: Okay. Well, then, as with the others, I'll admit it once we have all these issues resolved. Otherwise, it does not get admitted yet.

Proceed.

MR. EVEN: Thank you, Your Honor.

BY MR. EVEN:

Q. Professor Athey, what is your occupation?

A. I'm the economics of technology professor at the Stanford Graduate School of Business.

Q. Thank you.

And have you prepared a demonstrative slide that summarizes your background?

A. I have.

MR. EVEN: If I can bring up that slide. Thank you.

BY MR. EVEN:

Q. Can you please describe your educational background.

A. Yes. I have a bachelor's degree in economics, computer science, and mathematics from Duke University and a Ph.D. in

1:19:04PM economics from Stanford.

1:19:06PM Q. And when did you receive your Ph.D. from Stanford?

1:19:09PM A. In 1995.

1:19:12PM Q. How long have you been a professor?

1:19:14PM A. I've been a professor since then at Harvard, MIT, and
1:19:20PM Stanford.

1:19:21PM Q. And how long have you now been at Stanford?

1:19:24PM A. Most recently, since 2013.

1:19:28PM Q. Have you won any awards, Professor Athey?

1:19:31PM A. I have.

1:19:32PM Q. Which awards have you won?

1:19:35PM A. I'm an elected member of the National Academy of Science,
1:19:38PM and I've received the John Bates Clark Medal from the American
1:19:41PM Economic Association.

1:19:44PM Q. And what is the John Bates award?

1:19:47PM A. It's for the economist -- American economist under the age
1:19:50PM of 40 who has made the most significant contribution to
1:19:53PM thought and knowledge.

1:19:56PM Q. Do you have a particular area of focus for your research
1:20:02PM as a professor?

1:20:03PM A. Yes. Generally, industrial economics, the economics of
1:20:06PM digitization, the economics of platforms and marketplace
1:20:11PM design, and the intersection of machine learning and
1:20:15PM econometrics.

1:20:18PM Q. Have you taught any courses related to the economics of

platforms?

A. Yes. I've taught a variety of courses to master students and Ph.Ds and MBAs, including the economics of digitization, topics in digital business, marketplaces for goods and services, the economics of digital platform markets.

And, broadly, these classes study the forces that -- sources of profits for firms, the tactics that incumbents use, and strategies that entrants might use to come into these markets.

Q. Thank you.

Do you do any work outside of academia?

A. I do.

Q. And can you please summarize for the Court your nonacademic work experience.

A. Yes. I was consulting chief economist for Microsoft for several years.

After that, I've served on boards of directors for a variety of companies, including Expedia, which is a platform for travel services; Rover, which is a platform for pet-related services, such as dog sitting; Turo, which is a platform for peer-to-peer car sharing; and some others.

I also advise a couple of venture capital firms on their investments in technology-related businesses.

Q. Thank you.

I see on the slide at the very bottom, it says "California

Governor's Council of Economic Advisors.

What is that?

A. That's a committee of academic economists who advise the governor of California on policy issues.

Q. Have you ever been retained as an economist by any government agencies?

A. Yes, I have, by the Department of Justice and the Federal Trade Commission.

Q. And have you ever presented to antitrust regulators in the U.S. or outside of the U.S.?

A. Yes, in many jurisdictions, including the United States, Europe, Canada, and others.

Q. Thank you.

MR. EVEN: Your Honor, at this time, Epic Games tenders Professor Susan Athey as an expert in industrial organization, platform economics, and the economics of technology.

THE COURT: Any objection?

MS. DUNN: No objection.

THE COURT: She's admitted as such.

MR. EVEN: Thank you, Your Honor.

BY MR. EVEN:

Q. Professor Athey, what have you been asked to do in this case?

THE WITNESS: Can you go to the next slide, please.

1:22:57PM So my assignment was to analyze whether Apple's conduct
1:23:02PM affects the competition faced by Apple's smartphone operating
1:23:06PM system platform and, further, to consider how middleware
1:23:12PM affects competition between mobile platforms and if Apple's
1:23:15PM conduct impedes the development of middleware.

1:23:19PM **BY MR. EVEN:**

1:23:19PM **Q.** And did you reach any conclusions?

1:23:22PM **A.** I did. So at a high level, I have three main opinions.

1:23:28PM The first is that --

1:23:30PM **THE COURT:** And to the extent you can, we tend not to
1:23:34PM read.

1:23:34PM **THE WITNESS:** Yes.

1:23:36PM **THE COURT:** Try to just testify.

1:23:37PM **THE WITNESS:** Thank you.

1:23:40PM **THE COURT:** Go ahead.

1:23:41PM **THE WITNESS:** At a high level, switching and mixing
1:23:43PM and matching costs are locking consumers in to the iOS
1:23:48PM ecosystem.

1:23:50PM Second, middleware is something that can meaningfully
1:23:55PM reduce these costs for both users and developers.

1:23:59PM And, third, restrictions that are imposed by Apple block
1:24:06PM users and developers from using this middleware, and that has
1:24:10PM a consequence that Apple can retain its market power over both
1:24:16PM users and developers.

BY MR. EVEN:

Q. So you start by talking about switching costs, so let's start with that.

MR. EVEN: And if we can go to the next slide.

BY MR. EVEN:

Q. What are switching costs?

A. Basically, switching costs are just the costs that you bear when you leave one platform, like in this case iOS, and go to a different platform, like Android.

Q. So let's take a look at the steps that you have here on the slide, and let's start with the first step.

Can you explain the first step that a user switching from iOS to Android needs to take, as portrayed on the slide.

A. So, first, a user has been consuming services with their iOS, and so they are going to need to look and see, for each of their apps, whether they can find those apps on Android.

Now, a typical user has more than a hundred apps, so they need to determine for each one if they can find them on Android.

Q. At the time that the user is considering buying, for instance, a Samsung Galaxy phone, why wouldn't the user already know whether their apps are available on Android or not?

A. So when they are consuming an app on iOS, Apple's restrictions prevent the developer from informing the user

1:25:45PM about what other platforms they might find that app on.

1:25:50PM So they can't tell just from looking at their apps on

1:25:54PM their iPhone where else they might be able to find that, in

1:25:59PM particular, in this case, Android.

1:26:03PM Q. Going to the next step, you talk about identifying
1:26:07PM alternatives.

1:26:08PM What are you referring to in that step?

1:26:11PM A. So not every app that they have on iOS might be available
1:26:16PM on an Android. And so if there is an app that is not
1:26:22PM available on Android, they would need to do the research to
1:26:26PM figure out which new app they might buy.

1:26:29PM Now, they've already made a purchase and own that app on
1:26:32PM iOS, so they're going to be incurring a new cost to receive
1:26:36PM similar services. They will need to compare and determine
1:26:39PM which app provides similar functionality and do a cost-benefit
1:26:44PM analysis for their new purchase.

1:26:48PM Q. And can you provide the Court with an example of an app
1:26:54PM that exists on iOS but doesn't exist on Android, for
1:26:58PM example?

1:26:58PM A. Yes. So one example is the Moleskine Flow, and this is an
1:27:03PM app that students might use to take notes or draw figures or
1:27:08PM diagrams in class. And this app is available on the iOS,
1:27:12PM but it's not available on Android.

1:27:17PM Q. Turning to the third step on this slide, you talk about
1:27:20PM purchase, repurchase, and reinstall. So let's take these one

1:27:24PM by one.

1:27:25PM What do you mean by "purchase."

1:27:27PM A. Well, so when you are buying a different app to replace
1:27:30PM the functionality, then you need to buy it. That's the
1:27:35PM purchase.

1:27:35PM Q. And what do you mean by "repurchase"?

1:27:36PM A. So for other apps, you've purchased it on the iOS, but
1:27:43PM if you -- even if the same app is available on Android, you
1:27:46PM would need to purchase it again, pay that same price or
1:27:52PM similar price for that app on Android, even though you already
1:27:57PM bought it on iOS.

1:27:58PM So an example like that would be *Minecraft*. *Minecraft* is
1:28:02PM a game where you pay before you download it. If you had done
1:28:08PM that, say paid 6.99 on iOS and purchased it, you own it on
1:28:14PM iOS. If you go to Android and you want *Minecraft*, you will
1:28:19PM pay 6.99 again to have the game on Android.

1:28:26PM Q. Then you mentioned reinstalling or installing.

1:28:28PM Which apps would you need to reinstall on the Android
1:28:34PM device?

1:28:34PM A. All of them.

1:28:36PM Q. Let's go to the last step, "Transfer of app-related data."

1:28:43PM What is that referring to?

1:28:46PM A. Well, so in some cases, transferring app-related data
1:28:49PM might not be possible. So with *Moleskine*, I have a library of
1:28:53PM notes and drawings and sketches that I made while taking notes

1:28:56PM in class, and so given that I won't have Moleskine, I can't
1:29:02PM transfer that data.

1:29:03PM But for other apps, you might have in-app purchases. You
1:29:10PM might have made progress, settings, customized it to your own
1:29:14PM experience. If you are in a game, you might have progressed
1:29:17PM through levels or spent time earning yourself up. And that's
1:29:20PM the kind of data that could be transferred if possible.

1:29:29PM Q. What if you were buying a subscription -- and I apologize
1:29:31PM for the East Coast example -- but let's say I have *The New*
1:29:36PM *York Times* subscription that I bought through the App Store on
1:29:40PM my iPhone.

1:29:40PM What happens to that subscription if I want to switch to a
1:29:45PM Galaxy phone from Samsung?

1:29:48PM A. So if I purchased that subscription on my iPhone, I need
1:29:51PM to continue to manage that subscription through Apple, even
1:29:55PM though I no longer have an Apple device to manage the
1:29:59PM subscription.

1:29:59PM So I might need to find a different device and go to the
1:30:05PM website, for example, and log in to Apple. If I needed to
1:30:09PM update my credit card or, say, add a feature, some extra
1:30:15PM payment for, I don't know, a crossword puzzle, something like
1:30:19PM that, on the *New York Times*, I would need to still go back to
1:30:23PM Apple to manage that, even though I now have an Android device
1:30:27PM and that's where I'm using it.

1:30:30PM THE COURT: Really? I thought you could just go --

1:30:35PM well, I guess I don't know Androids, but if it went the other
1:30:38PM way, I thought all these subscription services just asked you
1:30:42PM to put in your I.D. number, your password, and then it was
1:30:47PM accessible.

1:30:49PM **THE WITNESS:** So that depends on which kind of
1:30:52PM service and what kind of account management system the app has
1:30:56PM created.

1:30:56PM So you might be thinking of an experience like *Netflix*,
1:30:59PM where you've signed up for *Netflix*, say through a browser, and
1:31:05PM then when you log in to *Netflix* on the Android or the
1:31:08PM iPhone --

1:31:09PM **THE COURT:** I'm talking about *The New York Times*.

1:31:11PM **THE WITNESS:** -- you can get that.

1:31:11PM But so for the *New York Times*, you might have bought the
1:31:12PM subscription in different ways. So if you bought it
1:31:16PM originally through the web, then the *New York Times* is
1:31:20PM managing your subscription.

1:31:21PM And so you've entered your payment details with *The New*
1:31:24PM *York Times*, and then you could -- say you bought it a long
1:31:29PM time ago on the web and now you want to use it on Android, you
1:31:32PM would then authenticate that way.

1:31:34PM But if you purchase a subscription through Apple, then
1:31:38PM Apple has the payment information, and Apple's restrictions
1:31:43PM would require, for example, that only Apple could provide a
1:31:47PM refund or, you know, any other services around that payment.

So if you didn't have a computer, for example, or you didn't have easy access to one, then what you might want to do is instead manage it through an Android app. At that point, you would go to the Apple website. When the subscription runs out, you can cancel the subscription there and then create a new subscription a different way.

THE COURT: I see. Thank you.

BY MR. EVEN:

Q. Looking at the four steps that you've just laid out on this slide, Professor Athey, how does this process compare to the replacement of an older iPhone with a newer iPhone?

A. It's very different. If you upgrade to a new iPhone, all of your apps automatically install and the app-related data is automatically passed over in almost every case.

So you pick up your new iPhone, the apps are installed. You haven't had to search for any of them. Your app-related data would also be transferred, your subscriptions, and so you would just pick up right where you left off with the new phone.

Q. Thank you.

I believe in your conclusions, you also mentioned something that you referred to as "mixing and matching costs."

What are mixing and matching costs?

A. Yes.

THE WITNESS: Can we go to the next slide, please.

1:33:30PM So, broadly, this is just the cost to users of accessing
1:33:36PM apps and services on multiple devices with incompatible
1:33:42PM operating systems.

1:33:43PM **BY MR. EVEN:**

1:33:44PM **Q.** And could you explain what you show in this scenario on
1:33:47PM the slide here as it relates to mixing and matching costs?

1:33:52PM **A.** Sure. So at different times of day, you're going to have
1:33:57PM access to different devices or different devices may be more
1:34:02PM convenient to you or, you know, devices may be shared within a
1:34:09PM family, so you don't always have access to the same device.

1:34:13PM So if you were in the park in the morning, you might have
1:34:16PM access to an iPhone. At a different time of day, say in the
1:34:21PM afternoon, you might be doing productivity-related activities,
1:34:25PM say on a laptop with a larger screen and a keyboard, where you
1:34:30PM can input information. And then at night before bed, you
1:34:33PM might want a medium-size screen to read a book with larger
1:34:41PM print or to watch a show.

1:34:42PM So you'll be actively engaged with different devices for
1:34:48PM different reasons, but you still might like to have access to
1:34:55PM things like communications or apps that -- where you might
1:35:00PM need to access information that had shared data, et cetera, at
1:35:04PM these different places.

1:35:07PM And so the mixing and matching costs here would be the
1:35:13PM costs associated with trying to access those from different
1:35:18PM platforms.

1:35:20PM Q. So can you speak to the bullet points on the right? What
1:35:24PM are the costs that you have identified here?

1:35:27PM A. Well, so just for example, suppose that I have an iPhone
1:35:31PM and I'm considering using a cheaper Android tablet for my
1:35:38PM evening videos. If I wanted to also be able to, you know,
1:35:43PM access communications or things like that, then I would need
1:35:47PM to think about identifying and locating cross-platform apps,
1:35:51PM apps that would work across the iOS and Android.

1:35:57PM And if I wanted any services on both of them, I would need
1:36:02PM to repurchase apps as I described before. So similar to the
1:36:06PM switching scenario, but now I'm using different device types.

1:36:14PM Q. So you mentioned that this can happen within families.
1:36:17PM Have you prepared a slide explaining what are mixing and
1:36:23PM matching costs within a family?

1:36:24PM A. Yeah, so families are a very common example. There's
1:36:26PM other groups where this occurs too.

1:36:29PM And in this kind of scenario, a family might acquire
1:36:33PM different devices over time, so you might start out a parent
1:36:38PM has a personal phone. Maybe they have started out with an
1:36:41PM iPhone. There are scenarios where they have their iPhone
1:36:49PM conveniently with them while they are waiting with their
1:36:52PM child, and so they start buying apps for that child to use in
1:36:57PM scenarios like that. And so they accumulate a set of games
1:37:03PM for their kid on their iPhone.

1:37:06PM Now, later they might decide they want also a tablet for

1:37:12PM the family to share. If they were considering getting a
1:37:17PM low-cost tablet, they would have to then contemplate the same
1:37:23PM kinds of switching costs or mixing and matching costs I
1:37:29PM previously described. They would need to contemplate whether
1:37:31PM they were going to purchase -- repurchase apps or stay within
1:37:35PM the ecosystem.

1:37:37PM So suppose they bought an iPad. They could then bring
1:37:40PM over the apps that they had already purchased on the iPhone
1:37:45PM through family sharing, so they wouldn't have to repurchase
1:37:48PM the apps in that case. But they might buy some additional
1:37:54PM games, so maybe they buy a subscription to *Minecraft* on the
1:38:00PM family tablet.

1:38:01PM Now later again, they might contemplate, as a child grows,
1:38:06PM buying them their first phone, a phone to have available
1:38:10PM for -- whether it's a Zoom call to school or, you know,
1:38:15PM calling when they need to be picked up from an activity.

1:38:19PM But if they wanted to buy a low-cost Android device,
1:38:24PM again, worried they might lose it, crack the screen, don't
1:38:27PM think you should be spending, you know, as much money on a
1:38:30PM child's phone, instead of just being able to consider the cost
1:38:34PM of the device, they would also have to consider the cost of
1:38:38PM repurchasing apps that had already been accumulated.

1:38:41PM And so in that way, the -- you have a disincentive to
1:38:47PM switch as you accumulate devices within a family.

1:38:51PM Q. So I think you covered the third -- three points.

1:38:54PM You also mention here on the slide "parental controls."

1:38:58PM What are you referring to there?

1:39:00PM **A.** So in this scenario, of course, many parents want to limit
1:39:04PM the screen time of their children and they also want to make
1:39:08PM sure they are not exposed to inappropriate content.)

1:39:10PM So they might -- in the scenario where they had the iPhone
1:39:16PM and the iPad, they might be using parental controls from
1:39:23PM Apple. But if they went to add a device outside, they would
1:39:29PM need to search for an app that would allow them to manage
1:39:37PM cross-platform and, again, potentially purchase that.)

1:39:40PM **Q.** And can they search for an app that works cross-platform
1:39:44PM on the Apple App Store?

1:39:47PM **A.** No. That information is not allowed to be shared with
1:39:51PM consumers, so when you are searching for those apps, the apps
1:39:56PM can't advertise what other platforms they might be on.)

1:40:02PM And so when making that original purchase, you might not
1:40:07PM have focused on the fact -- or adopt- -- making your initial
1:40:14PM adoption decision, you might not have focused on the fact that
1:40:16PM it wouldn't provide you that cross-platform functionality, and
1:40:21PM it would be difficult to know that.)

1:40:25PM **MS. DUNN:** Objection, Your Honor. Move to strike.
1:40:26PM That's an opinion that was not disclosed in Dr. Athey's
1:40:28PM report.

1:40:31PM **THE COURT:** So what paragraph of your report is it?
1:40:34PM Can I find it if it's there?

MR. EVEN: I believe it's in paragraph 31 of the written direct, which was stipulated to. I can go back and find it in the report itself, but...

THE COURT: I'm looking at paragraph 31. You mean of the written or of the direct testimony?

MR. EVEN: Of the written direct testimony. In the middle --

THE COURT: Let me read, Counsel.

Is there a dispute that Apple prohibits advertising of cross-platform apps? Ms. Dunn, is there a dispute?

MS. DUNN: Your Honor, no, but this witness has not disclosed any opinions on that topic.

THE COURT: Overruled. I think it's within the confines of 31, especially given there is no dispute.

Proceed.

MR. EVEN: Thank you, Your Honor.

BY MR. EVEN:

Q. So I want to switch a little bit. You've talked a little bit about the cost to the users. Obviously, the Court has heard a lot about how these markets have two sides to them.

And my question to you is, wouldn't the developers go out of their way to solve these problems for the users?

A. The developers have a strong incentive to try to solve these problems for consumers.

THE WITNESS: Can we go to the next slide, please.

1:42:26PM So the reason a developer cares so much about this is that
1:42:31PM the more the user can consume their services, the more value
1:42:37PM the consumer gets from them. So if they can access the app
1:42:43PM both, you know, in the park and in bed at night, that's going
1:42:49PM to create more value for the developer.

1:42:52PM And if the developer can maintain a relationship with the
1:42:55PM user, that -- that's also beneficial for the developer. So
1:43:02PM the developer wants to make it easy for their relationship to
1:43:06PM go with the user wherever the user wants to go.

1:43:11PM **BY MR. EVEN:**

1:43:12PM Q. And so what is the impediment to that? And maybe let's
1:43:16PM talk about the first two that you were alluding to on the
1:43:19PM slide.

1:43:19PM A. Well, so the developer faces costs to making this happen.

1:43:26PM So the first thing is that if the developer wants to
1:43:30PM maintain a relationship with the user, they need an account
1:43:34PM management infrastructure. So they need, basically, a
1:43:38PM database that helps them keep track of who the users are.

1:43:42PM And they also need a payment infrastructure -- a
1:43:48PM cross-platform payment infrastructure that will allow them to
1:43:53PM make sure that things that a user has bought in one place
1:43:57PM would be available in a different place.

1:44:00PM Now, those things are costly. Large developers would have
1:44:07PM the scale economies, in principle, to justify the costs, but
1:44:14PM smaller developers often wouldn't build those.

1:44:18PM Q. So going to the third point in your slide about reduction
1:44:21PM in engagement, what might cause reduction in engagement for
1:44:26PM the developer?

1:44:28PM A. Well, so it's a pain to create an account and come up with
1:44:33PM a new password. And if you're looking at an application,
1:44:36PM considering it, and you haven't used it yet, you're not sure
1:44:41PM what the value is going to be, a user might not want to bother
1:44:47PM with going through this hassle of, you know, one more account.
1:44:51PM And so in practice, that can really get in the way of an
1:44:58PM application incentivizing the user to do it.

1:45:02PM So putting those two things together, the infrastructure
1:45:05PM is costly to build, which may not be economical for midsize or
1:45:10PM smaller apps, and the fact that it's difficult to get the
1:45:13PM consumers to do it, you see that even though they would like
1:45:17PM it, small and midsize apps would typically not do this, even
1:45:22PM some larger apps.

1:45:25PM Q. Going to the last point, "No one-stop shop," what are you
1:45:29PM referring to on that?

1:45:32PM A. Well, the developers, all else equal, want to make things
1:45:36PM easy for users. But the problem that I described the user was
1:45:40PM facing was not just bringing over one app from one platform to
1:45:45PM the next, but bringing over all of the apps. It's a big
1:45:49PM collection of apps.

1:45:50PM And so it's the sum of all of those frictions across lots
1:45:53PM of apps, passwords, accounts, that friction, that can be an

1:45:58PM

impediment to someone to switching.

1:46:01PM

And so solving that problem for a collection of apps is

1:46:06PM

not something that a single developer can solve, even though

1:46:10PM

they wish it was there.

1:46:12PM

Q. Do developer also incur any costs simply for trying to

1:46:19PM

operate their apps on different platforms, on both iOS and

1:46:23PM

Android in this case?

1:46:25PM

A. Yes.

1:46:25PM

So we go to the next slide, please.

1:46:28PM

So we've just been talking about costs to a developer from

1:46:33PM

trying to provide services to their users across two platforms

1:46:38PM

like iOS and Android.

1:46:42PM

To provide their services across two platforms, the

1:46:46PM

developers also have to port the code. Different code runs

1:46:51PM

on iOS and Android, and it's costly to create that

1:46:56PM

additional code base. So those are called porting costs.

1:47:01PM

BY MR. EVEN:

1:47:01PM

Q. And so given these porting costs, can you explain why is

1:47:08PM

it that we still find many, many apps across both iOS and

1:47:15PM

Android?

1:47:16PM

A. So a developer is going to consider the costs and benefits

1:47:20PM

from porting.

1:47:21PM

For big, mature, established platforms like iOS and

1:47:27PM

Android, there are lots of consumers there. So, in general,

1:47:30PM

the benefits of porting your code are outweighed -- are higher

than the cost of doing the porting.

So today, you know, most important apps are on both

platforms and multihoming is common. But those costs that --

we'll see a very different scenario when thinking about an

entering platform.

So an entering platform is going to face what's widely

known as the chicken and egg problem. So the chicken and egg

problem is that a developer doesn't want to bother porting

their code to a platform without many users, but a user

doesn't want to go to a new platform without many developers.

So the porting costs lead to the app barrier to entry,

which is widely understood to be the barrier in this type of

market, and in particular, that app barrier to entry supports

the high profits that otherwise we would expect would invite

entry.

Q. So trying to summarize a little bit, you talked about

switching costs, you talked about mixing and matching costs,

you talked about cross-platform management costs, and then you

talked about cross-platform porting costs.

In your opinion, how do these costs, in the aggregate,

impact competition between iOS and Android?

A. So in my opinion, they stifle competition between iOS

and Android. So we're talking about a scenario where we have

a stable duopoly where most users are already locked in and

where even the few new arriving users, like children coming of

1:49:40PM age, are already going to be influenced by the platform

1:49:44PM purchases of their parents.)

1:49:47PM So in this environment with locked-in consumers, we have a

1:49:53PM scenario where the platforms are adding additional frictions

1:50:01PM to an environment where we already expected to have -- to have

1:50:08PM switching costs. And these additional costs create --

1:50:11PM maintain market power over both users and developers.)

1:50:18PM So from the user perspective, the fact that you have these

1:50:25PM switching costs means that you're going to be less sensitive

1:50:29PM to low prices or new features that a platform introduces. You

1:50:38PM know, as your needs change over time, you might want to switch

1:50:42PM platforms and you might be attracted by a feature that meets

1:50:46PM your needs, but the switching costs impede the consumer's

1:50:50PM response to that and also thus create less incentive for firms

1:50:56PM to create them.)

1:50:57PM On the developer side, thinking from that perspective,

1:51:00PM it's exactly locked-in consumers that creates the market power

1:51:07PM over developers. The developers understand that even a

1:51:12PM popular developer can't induce consumers to switch platforms

1:51:19PM just to get that app and, as a result, an increase in consumer

1:51:25PM switching costs will increase the market power the platform

1:51:30PM can exert over developers.)

1:51:33PM Q. Thank you.

1:51:35PM Do you understand that some of the Apple experts in this

1:51:38PM case have criticized you for not ruling out the possibility

1:51:42PM that switching costs in this case are, in fact,
1:51:44PM procompetitive?

1:51:47PM **A.** Yes.

1:51:48PM **THE WITNESS:** Excuse me. Your Honor, the screen
1:51:52PM seems to have gone blank.

1:51:55PM **THE COURT:** It may have. I'm not -- I don't control
1:51:56PM that.

1:51:56PM **THE WITNESS:** Yeah, sorry. Yes. Thank you.
1:51:58PM Yes, I'm aware.

1:52:04PM **BY MR. EVEN:**

1:52:04PM **Q.** And do you agree with that criticism?

1:52:06PM **A.** No.

1:52:07PM **Q.** And can you very briefly explain why you disagree with
1:52:11PM that criticism?

1:52:13PM **A.** So the consensus of economists is that when you see a
1:52:19PM setting where firms choose to impose additional switching
1:52:26PM costs, artificial switching costs that create real costs for
1:52:31PM consumers, they are doing that in pursuit of profits. That's
1:52:36PM why they choose to do so, for example, with high prices. And
1:52:44PM that can be harmful for consumers.

1:52:47PM Now, the papers cited by Apple are consistent with that,
1:52:53PM that now they -- in different settings, there can be edge
1:53:01PM cases, cases in dynamic markets with, for example, entry or
1:53:06PM frequent switching where the primary focus of competition is
1:53:12PM new users and that's what's driving firm decisions. In that

case, introductory discounts can become a locus of competition.

But that's the exact opposite of the case we have here, where there are already high switching costs. We don't see a lot of switching, and the locus of competition on new users is small and the incentives are shaped by the existing users.

Q. Thank you.

So I would like to switch gears a little bit and turn to your second conclusion that had to do with the effects or potential effects of middleware.

And just to level set, what are you referring to when you are talking about middleware?

A. So middleware is technology that facilitates users and developers interacting across different platforms, reducing costs such as the switching and mixing and matching costs or porting costs that we have been discussing.

Q. So is middleware a well-understood concept in the area of industrial economics?

A. Yes, it's a well-understood concept. When you say "middleware" in economics, it's most closely associated with the Microsoft antitrust case.

So the concept in that case centered around the idea that middleware such as browsers could facilitate users and developers interacting across platforms.

For example, if a user with -- on one of the incumbent

platforms was using the web on their browser, say, on Windows, the fact that they could also consume those apps through a browser on an entering platform would reduce the barriers to entry due to the chicken and egg problem.

From the developer side, because the developers could create experiences through the browser, the developers were willing to incur the cost of meeting the consumers on the incumbent platform through the browser, but then they wouldn't incur porting costs if the consumers went to a new platform.

So middleware has this prominent role as something -- one of the things that can help a new entrant overcome the app barrier to entry, and it thus plays a central role in platform competition.

So that's exactly the concept as I'm using it here. It's a different technology today than in the '90s, but the economic consequences and concept are the same.

Q. So can you provide some examples of middleware that you think are relevant to this case?

A. So two types of middleware I focused on. One is cross-platform app stores and the other are app streaming platforms.

Q. So let's start with cross-platform app stores.

You mentioned -- strike that.

Can you -- maybe let's just start from the basics. What do you mean by "cross-platform app store"?

1:56:53PM **A.** Sure.

1:56:53PM **THE WITNESS:** The next slide, please.

1:56:55PM So cross-platform app stores operate across multiple
1:57:02PM platforms, and therefore they allow users to migrate and
1:57:06PM synchronize their apps on all of those platforms, which has
1:57:11PM the benefit of reducing the switching and mixing and matching
1:57:14PM costs we talked about earlier. The cross-platform app stores
1:57:19PM can provide some or all of the services to help mitigate
1:57:26PM those.

1:57:26PM **BY MR. EVEN:**

1:57:26PM **Q.** So when you talk about cross-platform app stores, just so
1:57:30PM we all understand what that's all about, how would that
1:57:35PM actually work in reality? What would a cross-platform app
1:57:39PM store allow a user to do when they switch from an iOS phone
1:57:44PM to an Android phone?

1:57:46PM **A.** So a cross-platform app store ideally would make it almost
1:57:49PM as easy as upgrading your iPhone today. So you -- going from
1:57:55PM iPhone to Android, you would need to download --

1:58:00PM **THE COURT:** Just --

1:58:00PM **THE WITNESS:** I'm sorry.

1:58:00PM **THE COURT:** I'm going interrupt and then you can
1:58:04PM finish off.

1:58:04PM Is this the same thing, back to our *New York Times*
1:58:07PM example, as if I had gone to *The New York Times*, gotten my
1:58:14PM subscription directly from them, and then I could use it on

1:58:18PM any device that I wanted?

1:58:19PM **THE WITNESS:** That would be one benefit, yes.

1:58:22PM **THE COURT:** But not just a benefit, that's an
1:58:24PM alternative mechanism to get the same result, correct?

1:58:27PM **THE WITNESS:** For a single app, yes.

1:58:33PM **THE COURT:** So one of the problems is that on the
1:58:36PM Android and the iPhone, *The New York Times* can't tell them,
1:58:42PM Hey, go and sign up on our website and then you can have
1:58:48PM access across devices.

1:58:50PM **THE WITNESS:** Yes.

1:58:50PM **THE COURT:** Okay. So if they did that, then there
1:58:53PM wouldn't really be the same kind of need for this
1:58:57PM cross-platform app store that you're talking about.

1:59:02PM **THE WITNESS:** I think it -- that would be a big
1:59:06PM benefit, I agree, that you could alert people to the most
1:59:12PM efficient way to pay. And if people valued cross-platform
1:59:16PM access, that would be a benefit. And if consumers understood
1:59:19PM that, they would need to do it.

1:59:21PM **Consumers do get clutzy and disconnected and sensitive to**
1:59:28PM **delays when trying to complete that type of activity, and so**
1:59:33PM **making it easy, you know, being able to also, you know, get**
1:59:38PM **there quickly would be helpful. But yes.**

1:59:40PM **THE COURT:** That would be, one, their choice, and,
1:59:43PM two, because there are lots of various considerations in
1:59:48PM antitrust law, that would be an alternative solution.

THE WITNESS: To the problem of a single app. And so that would be helpful, I think, especially for the largest apps. So the --

THE COURT: Proceed.

BY MR. EVEN:

Q. So just to pick up on the Court's question, how -- you say it would solve the problem for a single app.

Would that solve the problem for the -- what we refer to as the one-stop shop problem?

A. No. So smaller and midsize apps, apps where the consumer may be uncertain about the value that they are going to get, would still find it difficult to induce consumers to go and create those accounts.

And then, again, from the competition perspective, what's important is the sort of aggregate switching costs the consumer perceives. So, you know, even if there was cross-platform app store, a consumer might still be willing to separately log in to Netflix, you know. They are excited about their show and, you know, they are going to get to the next episode.

But they -- that would be -- it wouldn't solve the problem for imagining figuring out all of your accounts and successfully getting them over to there across a hundred apps.

MS. DUNN: Objection, Your Honor. I'm happy just to state this for the record, because I think it's included in

2:01:29PM the prior objection, but there is a lot of testimony about
2:01:32PM what consumers want and what consumers do. So for these
2:01:36PM purposes, we would just note that for the record.

2:01:40PM **THE COURT:** Well, again, Ms. Dunn, with respect to
2:01:44PM the last objection, it didn't seem to me that there was any
2:01:48PM dispute, so I didn't mind it.

2:01:50PM Is what you are saying is that there is no evidence in the
2:01:53PM record with respect to the consumers' perspective? I haven't
2:02:00PM memorized all these expert reports.

2:02:03PM **MS. DUNN:** I understand, Your Honor, and that's why I
2:02:04PM wanted to flag for the Court.

2:02:06PM Dr. Athey has testified quite a lot, subject to our
2:02:10PM original objection, about what consumers think, what they
2:02:14PM believe, what they are doing, and there's not evidence in the
2:02:18PM record as to that and we don't believe there will be. So it
2:02:22PM is covered by the original objection, but it's happened so
2:02:24PM much I just wanted to note it for the record.

2:02:27PM **THE COURT:** Well, have you done any survey evidence
2:02:30PM or research with respect to consumer actions, and, if so, can
2:02:37PM you point me to it in your direct testimony?

2:02:44PM **THE WITNESS:** So the number of apps, for example --

2:02:48PM **THE COURT:** Limited to your testimony.

2:02:48PM **THE WITNESS:** I'm sorry. So I did not conduct an
2:02:58PM original survey of consumers, if that was the first question.

2:03:07PM The facts about consumers --

ATHEY - DIRECT / EVEN

2:03:18PM **MR. EVEN:** Your Honor, if I may?

2:03:19PM **THE COURT:** No.

2:03:22PM **THE WITNESS:** Okay. I want -- I'm going to try to --

2:03:22PM I'll do my best to answer the question.

2:03:26PM **THE COURT:** You have your direct testimony in front

2:03:27PM of you.

2:03:28PM **THE WITNESS:** Yes, yes.

2:03:28PM **THE COURT:** It's in your binder.

2:03:30PM **THE WITNESS:** Okay. Thank you.

2:03:32PM **THE COURT:** I don't expect you to memorize the

2:03:34PM paragraphs either. I had a law professor who could do that,

2:03:39PM but he was --

2:03:40PM **THE WITNESS:** Not me, no.

2:03:41PM **THE COURT:** And the question is, is there anything in

2:03:42PM the direct testimony regarding consumer habits?

2:03:48PM **THE WITNESS:** Thank you.

2:04:16PM **THE COURT:** We can do it another way so that the

2:04:18PM clock is not ticking.

2:04:19PM **THE WITNESS:** Sure. Yes.

2:04:19PM **THE COURT:** The testimony with respect to consumer

2:04:20PM habits is stricken except that which exists in the direct

2:04:25PM testimony. All right?

2:04:25PM Let's proceed.

2:04:26PM **MR. EVEN:** Okay.

2:04:27PM **BY MR. EVEN:**

2:04:28PM **Q.** Professor Athey, is research into consumers' preferences
2:04:34PM and consumer behavior in the space of technology something
2:04:37PM that you research in your day-to-day --

2:04:42PM **THE COURT:** It doesn't matter if she does or not. If
2:04:45PM it's not in the report and wasn't disclosed, it is not
2:04:48PM properly in front of the Court.

2:04:49PM **MR. EVEN:** Oh, okay. So I'm sorry, Your Honor, maybe
2:04:51PM I misunderstood. If the objection is outside the scope, we
2:04:54PM can address that separately. That's an easy objection. I
2:04:57PM don't think -- I don't think that's what the objection was. I
2:05:01PM thought the objection was that there isn't a basis for her
2:05:04PM opinions, which --

2:05:06PM **THE COURT:** I understood it to be outside the scope.

2:05:09PM **MR. EVEN:** Okay.

2:05:11PM **MS. DUNN:** There's two objections here.

2:05:12PM One is she is testifying outside the scope.

2:05:14PM The second is she -- there is no basis for the assertions
2:05:21PM about what consumers do and think. And there's quite a lot of
2:05:26PM this, and it is not going to be proven up by the factual
2:05:29PM record --

2:05:29PM **THE COURT:** That's --

2:05:29PM **MS. DUNN:** -- nor is it --

2:05:29PM **THE COURT:** That's why I said it's outside the scope.
2:05:32PM So --

2:05:33PM **MS. DUNN:** Thank you, Your Honor.

2:05:34PM **THE COURT:** -- again, the testimony is stricken

2:05:36PM except to the extent that it is in the report. I'm not -- she
2:05:40PM couldn't find it quickly. I want to keep moving. It doesn't
2:05:44PM sound like it's in the report.

2:05:45PM But go ahead.

2:05:47PM **MR. EVEN:** Your Honor, I just want to make sure that
2:05:48PM the record is clear to me as to what it is that we are
2:05:52PM supposed to show.

2:05:53PM The testimony that Professor Athey is providing about
2:05:58PM users' switching costs, mixing and matching costs, and whether
2:06:02PM they want to do something or not is all in the report.

2:06:06PM **THE COURT:** Correct. And that's fine. It's in the
2:06:09PM report.

2:06:10PM **MR. EVEN:** Okay. So what is it that -- I'm not
2:06:12PM entirely sure -- what is it that we are currently missing?

2:06:14PM If there is a question about a survey, I think Professor
2:06:21PM Athey answered that, and I can lay foundation as to why she
2:06:24PM has general 703 basis to attest to what consumers face and
2:06:31PM don't face and how consumers behave more generally.

2:06:34PM **THE COURT:** If you want to go back to the report and
2:06:36PM use your time that way, that's fine. I can tell you that when
2:06:39PM I read her report, I had lots of questions on this document
2:06:43PM about the factual basis for the opinions, and I am trusting
2:06:46PM that to the extent there is something there, you will all give

2:06:49PM it to me.

2:06:50PM **MR. EVEN:** Okay.

2:06:50PM **THE COURT:** Because you all know your case better
2:06:52PM still, having lived with it for ten months, than I do. If
2:06:57PM there is not a factual basis, I will not consider it and
2:07:02PM it's -- and it will ultimately be stricken.

2:07:05PM But as I understood it, you all were still negotiating
2:07:10PM over whether the factual basis is ever proved up in some of
2:07:15PM these expert reports. So I'm relying, in part, on you all.

2:07:22PM **MR. EVEN:** And I appreciate that, Your Honor. I'm
2:07:24PM just not sure what is the factual basis that we want now,
2:07:27PM other than Professor Athey's general assessment as a professor
2:07:31PM of technology and economics, as to the incentives and what
2:07:36PM consumers may or may not do facing these incentives. That's
2:07:42PM clearly in the report, Your Honor.

2:07:45PM **THE COURT:** Then if it is in the report, you're all
2:07:47PM good.

2:07:49PM **MR. EVEN:** Okay.

2:07:53PM **THE COURT:** And I should say and it's still subject
2:07:56PM to your ongoing negotiations about the factual basis.

2:08:03PM **MR. EVEN:** I understand, Your Honor. I just want to
2:08:06PM make sure that I understand the objection, because my
2:08:09PM understanding is that somebody who researches what consumers
2:08:12PM and technology firms do for a living can come into court and
2:08:16PM testify to that based on their expertise.

2:08:20PM

THE COURT: They can testify as to what they have disclosed.

2:08:21PM

2:08:24PM

MR. EVEN: Absolutely, Your Honor. I don't really think there is a disclosure issue here, but that's okay. I appreciate that. I'll move on.

2:08:25PM

2:08:30PM

2:08:33PM

BY MR. EVEN:

2:08:34PM

Q. Professor Athey, do you have any examples -- let me take a step back.

2:08:41PM

2:08:41PM

Obviously, we don't have a cross-platform app store right now, correct?

2:08:47PM

2:08:49PM

A. Yes, correct.

2:08:50PM

Q. And so have you seen any examples of a cross-platform store that sells something other than apps?

2:08:55PM

2:09:01PM

A. Yes. So going back in history, when you used to watch movies and shows on the iPhone, you would purchase individual movies on iTunes, but you could watch those on -- in the iOS system.

2:09:10PM

2:09:14PM

2:09:20PM

2:09:20PM

Today, there are services like Amazon Prime Video or Netflix. Amazon Prime Video at the beginning offered the same kind of service to iTunes except you would buy movies or shows one at a time, but it was cross-platform and so people could buy on one device and move to another. And that type of -- that type of cross-platform experience is also -- is an example.

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2:09:54PM

2:09:55PM

Now, that's allowed, so Netflix and Amazon Prime Video are

allowed, but other types are not.

Q. Okay. Have you found any examples of cross-platform app stores that are outside of iOS?

A. I have.

Q. And can you give the Court an example or two?

A. Yes.

THE WITNESS: So next slide, please.

So one example of a cross-platform app store is the Epic Games Store. This is a store that's available on the Windows PC and the macOS.

BY MR. EVEN:

Q. And can you speak to the cross-platform benefits provided to users and developers by the Epic Games Store.

A. Yes. So the Epic Games Store builds the infrastructure I described earlier that makes it possible for developers to interact with their users through an account that would be available across all devices.

So in the case of the Epic Games Store, the user has an account with the Epic Games Store that allows them to access their library of apps and have them easily available across any platform that they choose to use.

Another service provided by the Epic Games Store is a cloud service that, again, makes it possible for developers to sync the users' data, app-related data, their purchases, what levels they are at, across platforms.

2:11:46PM So if you went -- if you decided to switch from Windows PC
2:11:53PM to macOS, what you would do is you would just log in to the
2:12:00PM Epic Games Store and you could pick back up right where you
2:12:04PM left off.

2:12:06PM There would also be a wallet service. So if you had
2:12:08PM entered your payment information when you had a PC, that would
2:12:14PM also be available on the macOS, so just pick right up where
2:12:20PM you left off.

2:12:20PM Q. Got it. Thank you.

2:12:21PM Now, you mentioned that the Epic Games Store is available
2:12:25PM on the macOS.

2:12:26PM How does the Epic Games Store compare, for instance, to
2:12:30PM the Mac Apple App Store that's on Mac?

2:12:34PM A. It provides a similar set of services except that if you
2:12:39PM buy things through the macOS store, they are locked into the
2:12:43PM Apple ecosystem. You can't use them across.

2:12:48PM Q. You also -- do you have another example of cross-platform
2:12:54PM app store outside of iOS?

2:13:00PM A. Yes.

2:13:00PM THE WITNESS: So the next slide.

2:13:01PM BY MR. EVEN:

2:13:05PM Q. So I see this is about Steam. Where is Steam available?

2:13:09PM A. Steam is available on the Windows PC, the macOS, as well
2:13:14PM as Linux PC.

2:13:17PM Q. And what services does the Steam store provide to users

2:13:22PM and developers so that they can work and transact across
2:13:28PM platforms?

2:13:31PM **A.** So it provides the infrastructure so that users and
2:13:35PM developers can interact in a similar way to what I just
2:13:38PM described. It provides services for account management,
2:13:43PM allowing the user to access a library cloud and wallet.

2:13:49PM **It also has an additional service, family sharing, where**
2:13:55PM **users can share apps and purchases across platforms within a**
2:13:59PM **family. So if one kid has a Windows PC, the other has to**
2:14:04PM **switch to, you know, Apple to be compatible with school, they**
2:14:08PM **can -- you know, they can share their apps and purchases in**
2:14:13PM **that way.**

2:14:14PM **Q.** All right. So let's switch gears for a second. You
2:14:17PM mentioned also streaming services. The Court has already
2:14:21PM heard testimony about streaming services some, but can you
2:14:26PM explain at a very high level, how would an app streaming
2:14:30PM service operate?

2:14:32PM **A.** Yes.

2:14:32PM **THE WITNESS:** Next slide, please.

2:14:33PM So this would feel a lot like a *Netflix* experience today
2:14:38PM from a user's perspective. They would be able to access a
2:14:43PM wide variety of content. They could easily switch between
2:14:49PM different types of content, try things out.

2:14:53PM And then, from the developer perspective, it's a very
2:14:58PM different experience than regular apps because the developer

is writing code that runs on servers in the cloud.

So the developer's code is written to the cloud, and they don't -- just like a movie producer can make a movie and not worry about where people are going to watch the movie, a game developer could develop once and then that game would be available on, you know, any platform, and they wouldn't have to worry about, say, you know, porting to a new or smaller platform.

Q. Thank you.

Are streaming services limited to games?

A. No.

Q. What other use cases could there be for app streaming services?

A. So these are nascent, I should say, and so they are coming into -- so they are coming into play as a result of costs and benefits.

What we see with games today is that they struggle with some latency challenges. There can be delays, so you need high bandwidth; but on the other hand, they can provide an immersive experience even on a device that is lower cost.

So taking those economic characteristics, there can be many other applications that would also benefit from being able to allow an immersive experience to be available on lower-cost devices.

A situation where you might want to -- need to reach a lot

of people, say, on -- your cheap devices might be an educational or a training experience, where, you know, it's important that the student understand the physical environment.

And so they want to have an immersive video experience that's interactive, but you want to reach low-wage workers or students with, you know, six-year-old hand-me-down phones. And so you want to provide that experience on a low-cost device.

So the general themes that we've heard about in terms of games have analogs in other industries, but it's still very early days.

Q. So you mentioned now that it's nascent, that it's in early days. Can app streaming services solve switching and mixing and matching costs today?

A. No. They are not big enough.

But, you know, the -- one of the big constraints has been bandwidth. And so if you think about a longer time horizon, five to ten years, you know, we are trying to make a lot of investments now to get bandwidth out there and more available.

The technology is improving. And so some of the constraints that have held it back could -- are expected to alleviate.

And so, you know, just like Netflix has transformed the way that content is produced and consumed in movies and shows, it could make a big difference. And the bigger difference it

2:18:39PM makes, the bigger impact it would have on mobile competition.

2:18:45PM Q. Thank you.

2:18:46PM Do iOS users currently have access to streaming
2:18:49PM platforms?

2:18:50PM A. Not in the way they are intended, no.

2:18:54PM Q. And what do you mean by "not in the way they are
2:18:59PM intended"?

2:18:59PM A. Well, so some of the big benefits are that, you know, you
2:19:02PM can have one app, similar to the *Netflix* app, and have lots
2:19:09PM of -- access lots of different things seamlessly from a user
2:19:14PM perspective.

2:19:14PM But the Apple App Store restrictions require that in order
2:19:20PM to offer multiple streaming games, it's necessary to -- for
2:19:28PM the user to download a separate app.

2:19:31PM So even though the separate app wouldn't have any
2:19:35PM additional functionality, there would be an additional app for
2:19:38PM each game.

2:19:41PM Q. What would a similar policy mean for something like
2:19:45PM *Netflix*, for instance?

2:19:47PM A. That would mean that for every movie or show that I wanted
2:19:50PM to watch, I would need to download a separate app. And if I
2:19:56PM wanted to switch between one movie and another, I would need
2:20:02PM to navigate to and switch to that separate app.

2:20:09PM Q. Thank you.

2:20:09PM You talked earlier about entry and some of the barriers to

entry and chicken and egg problem.

How would app streaming platforms affect, potentially -- if they come to -- become more mature, how could they affect entry in this space?

A. So remember, the chicken and egg problems arises because consumers don't want to use a device where there is not enough services.

But -- so if a consumer can go to a new platform and have access to multiple services, that makes it easier to reap the benefits of a low-cost device.

And so you could buy a low-cost device and then with a single app, you would be able to access this library of content, which would already be there because the developers wouldn't bear any porting costs. So as long as the streaming service has got the streaming app on the new platform, just one app needs to port, then the consumer suddenly would have a library of content.

So if you thought about getting a low-cost tablet for your child, imagine that it had, you know, *Amazon Prime Video* and a game-streaming app, you know, and a browser. Well, you know, that might be good enough for your kid. And so you could -- it would be rational for people to buy a low-cost tablet like that for their child.

The more people bought low-cost tablets for their kids or themselves, the more users there would be, and that could, in

2:22:15PM turn, induce additional entry.

2:22:19PM THE COURT: Do you still think we are in a chicken
2:22:21PM and egg environment?

2:22:24PM THE WITNESS: Between iPhone and Android, absolutely
2:22:27PM not. Most apps support it. So -- but now we have two firms
2:22:31PM that have high profits, and so we're concerned about making it
2:22:38PM possible for a third firm to enter.

2:22:41PM And so for a third firm to enter, which is what you would
2:22:45PM expect, given high profits, the third firm would have to
2:22:48PM overcome the chicken and egg problem. And for that, porting
2:22:53PM could be a substantial barrier.

2:22:55PM Now, for something like -- so Amazon has a tablet, the
2:23:00PM Amazon Fire tablet, that's a low-cost tablet. It's a modified
2:23:06PM version of Android, and so there, the porting costs are
2:23:10PM relatively low. They have their own app store, has a couple
2:23:15PM hundred thousand apps.

2:23:17PM So for that type of situation, you know, you've got some
2:23:21PM apps, you've got Amazon Prime Video, but you are missing some
2:23:25PM stuff too. And so, you know, something like a streaming app
2:23:30PM that brought some really great games to it, you know, people
2:23:36PM are already buying it, you know, for some use cases, but it
2:23:39PM could expand the use cases. So -- but this is really -- the
2:23:43PM porting is about entry.

2:23:46PM Did that answer the question? Thank you.

2:23:52PM

BY MR. EVEN:

2:23:52PM

Q. So switching to a separate topic, did you review any of the documents produced in this case?

2:23:56PM

2:24:00PM

A. Yes.

2:24:02PM

Q. And what was your process for reviewing these documents?

2:24:07PM

A. So I asked my research team to review nonconfidential documents and to identify documents that related to switching costs, mixing and matching costs, and the middleware, the themes -- and the other themes of my opinions.

2:24:12PM

2:24:18PM

2:24:21PM

Q. And why did you need to limit your review to nonconfidential documents?

2:24:26PM

2:24:32PM

A. Because years ago I was an employee of Microsoft, I understand that I am not allowed to review confidential information in this case.

2:24:35PM

2:24:39PM

2:24:42PM

Q. And did you identify any documents that you think bear on your opinions?

2:24:47PM

2:24:50PM

A. I did.

2:24:52PM

2:24:53PM

Q. Did you prepare a slide about one of those?

2:24:55PM

A. I did.

2:24:56PM

Q. Let's take a look at this slide.

2:24:59PM

And can you explain why you think this email from Mr. Cue is relevant to what you have opined on in this case?

2:25:05PM

2:25:11PM

A. Yes. So this is an email from Mr. Eddy Cue to Philip Schiller and Tim Cook, and the email is talking about switching costs related to apps.

2:25:18PM

2:25:26PM

2:25:28PM And so it articulates the precise logic that I was
2:25:36PM discussing, and it articulates that the considerations were
2:25:43PM important both quantitatively and qualitatively for strategic
2:25:49PM decisions as understood relative to the consumer behavior.

2:25:59PM And so the specific part of the quote here about consumers
2:26:06PM is:

2:26:06PM "Who is going to buy a Samsung phone if they have
2:26:11PM apps, movies, et cetera, already purchased? They now
2:26:15PM need to spend hundreds more to get where they are
2:26:20PM today."

2:26:22PM So they are expressing that the magnitude of these costs
2:26:28PM are going to be important for consumer behavior and enough to
2:26:32PM influence strategy.

2:26:34PM Q. So, as you said, this is an email, I think, from 2013.

2:26:39PM Do you think this email is still relevant today?

2:26:44PM A. So the economics are spot on to what we are talking about,
2:26:50PM but there is a difference.

2:26:53PM Q. What's the difference?

2:26:54PM A. So here, he's referring to movies. As I mentioned
2:26:58PM earlier, at that time, consumers who bought movies would be
2:27:04PM through iTunes, the -- part of the subject of this email,
2:27:10PM would be locked in to Apple. So if they bought movies through
2:27:16PM iTunes, that would create switching costs for moving to
2:27:23PM Samsung.

2:27:23PM Today, consumers have access to competition from

2:27:28PM cross-platform sources of movies and shows, and consumers have
2:27:35PM chosen those. You know, the market share is large for
2:27:46PM cross-platform movies and shows. So that part wouldn't be the
2:27:52PM main focus today, because consumers have cross-platform
2:27:57PM alternatives.

2:27:57PM But today, the logic would still apply to other types of
2:28:02PM apps where these types of cross-platform services are not
2:28:07PM available. And so that would be the component today.

2:28:13PM Q. Thank you very much, Professor Athey.

2:28:14PM MR. EVEN: I will pass the witness.

2:28:18PM THE COURT: Pass the witness?

2:28:24PM Ms. Dunn, cross.

2:28:37PM MS. DUNN: With the Court's permission, we would like
2:28:39PM to hand the witness and the Court a binder.

2:28:43PM THE COURT: Yes.

2:28:44PM MS. DUNN: Thank you, Your Honor.

2:28:44PM THE COURT: Whenever you are ready, you may proceed.

2:28:44PM MS. DUNN: Thank you, Your Honor.

2:28:47PM **CROSS-EXAMINATION**

2:28:47PM BY MS. DUNN:

2:29:35PM Q. Good afternoon, Dr. Athey. How are you? It's good to see
2:29:39PM you.

2:29:40PM A. Good afternoon.

2:29:40PM Q. You submitted your expert report on February 16th of 2021;
2:29:44PM is that right?

2:29:44PM A. That sounds right.

2:29:45PM Q. And you were deposed on April 3rd of 2021, about a month
2:29:48PM ago and change?

2:29:50PM A. Sounds right too.

2:29:52PM Q. Okay. And you testified on direct that after you
2:29:55PM submitted your report and after you were deposed, you reviewed
2:29:58PM some documents that had been dedesignated.

2:30:01PM And we will potentially talk about some of those, but I
2:30:05PM want to first talk about what you looked at when you were
2:30:09PM formulating your opinions and writing your report. Okay?

2:30:12PM A. Yes.

2:30:13PM Q. All right. Before your report and in developing your
2:30:14PM opinions, you did not review any of the Apple business
2:30:18PM documents produced by Apple in this litigation, correct?

2:30:22PM A. Correct.

2:30:23PM Q. And before your report, you also did not review any Epic
2:30:27PM documents produced in this case either, correct?

2:30:31PM A. Correct.

2:30:32PM Q. And --

2:30:33PM A. I'm sorry. So I reviewed David Evans' redacted report.

2:30:40PM Q. Fair enough.

2:30:41PM So with that exception, you have not reviewed any Epic
2:30:44PM documents before your report.

2:30:45PM A. Any -- I don't believe so.

2:30:59PM Q. Okay. And before your report, you also did not rely upon

2:31:03PM any third-party documents produced in this case. There are
2:31:06PM none in your "Materials Relied Upon," if that helps you.

2:31:10PM **A.** Correct.

2:31:10PM **Q.** Okay. So the result was that you didn't review any
2:31:15PM contemporaneous Apple documents related to why the App Store
2:31:20PM was structured in the way it was when you formulated your
2:31:23PM opinions.

2:31:23PM That's fair, right?

2:31:25PM **A.** I didn't review any confidential Apple documents about
2:31:28PM that, no.

2:31:29PM **Q.** Right. And so if there were confidential Apple documents
2:31:31PM that say how many people switched from Android to iOS or
2:31:34PM vice versa, you would not have seen those, correct?

2:31:38PM **A.** At the time of my report, correct.

2:31:40PM **Q.** Well, you would not have seen any surveys of consumers and
2:31:46PM how often they switch, if those were produced by Apple --

2:31:50PM **A.** Correct.

2:31:50PM **Q.** -- correct?

2:31:51PM And you also would not have seen any surveys or empirical
2:32:01PM data that show that actually switching costs -- switching --
2:32:03PM behavior of switching is significant, correct?

2:32:15PM **A.** I have not seen -- I've not seen evidence of significant
2:32:19PM switching, no.

2:32:20PM **Q.** Right. And if that evidence existed and was produced by
2:32:23PM Apple, you would not have seen it, correct?

2:32:29PM **A.** As I sit here now, documents such as that might have been alluded to in the redacted findings of fact or the direct testimony of Apple witnesses, for example. So that would be a source of qualitative information, or summaries of documents like that.

2:32:35PM
2:32:39PM
2:32:43PM
2:32:46PM
2:32:47PM **Q.** Right. But in developing your opinions, you did not see any of that.

2:32:49PM
2:32:50PM **A.** Correct.

2:32:51PM **Q.** And so in this case, you agreed to give opinions about the procompetitive effects of eliminating Apple's restrictions without reviewing any Apple confidential business documents; is that correct?

2:32:54PM
2:32:58PM
2:33:01PM
2:33:02PM **A.** Yes.

2:33:05PM **Q.** Have you ever done that before, offered an opinion about the procompetitive, or lack thereof, effects of a defendant's conduct without reviewing any of their confidential documents?

2:33:08PM
2:33:13PM
2:33:19PM **A.** Just to be clear, I make -- give advice and offer presentations, including to antitrust regulators or, you know, other -- other industry participants about market conduct, about expected industry structure --

2:33:25PM
2:33:31PM
2:33:40PM
2:33:45PM **Q.** I'm asking if you've ever done this before under oath in a court. Have you ever done that?

2:33:49PM
2:33:53PM **A.** No.

2:33:55PM **Q.** And by the time of your deposition on April 3rd of 2021, you also had not read any of the deposition transcripts in

2:33:57PM

2:34:02PM this case; is that right?

2:34:03PM **A.** Yes.

2:34:04PM **Q.** And before your deposition, you had reviewed none of
2:34:08PM Apple's expert rebuttal reports, including the rebuttals to
2:34:11PM your own opinions, correct?

2:34:12PM **A.** Correct.

2:34:13PM **Q.** And you didn't submit your own rebuttal report in this
2:34:16PM case?

2:34:17PM **A.** That's correct.

2:34:17PM **Q.** All right. Now, the reason you did not look at any of
2:34:20PM Apple's produced documents was because of your relationship
2:34:22PM with Microsoft, which is a competitor to Apple, correct?

2:34:29PM **A.** My understanding, it's because I was, at one point, a W-2
2:34:34PM employee of Microsoft.

2:34:35PM **Q.** Right. Because of your relationship with Microsoft, that
2:34:38PM is why you did not look at Apple's confidential documents.

2:34:42PM **A.** Yes.

2:34:42PM **Q.** That's right.

2:34:43PM All right. Did you see the evidence from Ms. Wright's
2:34:48PM testimony, the Microsoft 10-K, where Microsoft says they
2:34:52PM compete with Apple in gaming? Did you see that testimony?

2:34:57PM **A.** I didn't see that part of the testimony, no.

2:34:59PM **Q.** Okay. Did you see any of the testimony? Or, I'm sorry,
2:35:02PM hear, where we can't see anything. Did you hear any of that
2:35:06PM testimony?

A. I heard a bit about the description of streaming, but I haven't reviewed the entire testimony.

Q. And according to your C.V., which we can show you because it might make this easier, you were with Microsoft Research for ten years?

A. In varying capacities, yes.

Q. Right. And you were a consultant with the Microsoft Corporation for nine years.

A. In varying capacities, yes.

Q. Right. And it says -- here, it says you were a consultant to Microsoft Corporation from 2007 to 2016 and a consulting researcher with Microsoft Research from 2008 to 2018, correct?

A. Yes.

Q. Okay. And ultimately became a chief consulting economist at Microsoft?

A. So "ultimately" implies a timeline, so the -- so I was consulting chief economist in an earlier period and then later had different kinds of relationships, like consulting researcher, in order to collaborate on academic papers with Microsoft researchers.

Q. Okay. But one way or another, you have been working for Microsoft in some way since 2007, correct?

A. On and off.

Q. And since August of 2020, you have continued to consult for Microsoft; isn't that right?

2:36:34PM A. Again, on and off, but...

2:36:37PM Q. At your deposition, you said that since August of 2020,
2:36:41PM you've done economic consulting work for Microsoft.

2:36:45PM Is that true?

2:36:46PM A. Yes, that's correct.

2:36:47PM Q. Okay. But that wasn't on the C.V. that you submitted to
2:36:50PM the -- with your report.

2:36:59PM A. That is -- that is correct. My -- not all of my
2:37:03PM consulting clients are disclosed. Sometimes there's a NDA or
2:37:20PM there's not a public nature of the relationship --

2:37:22PM (Simultaneous colloquy.)

2:37:22PM Q. We just saw that you did disclose Microsoft, you just
2:37:28PM didn't disclose your work subsequent to 2018, correct?

2:37:33PM A. I disclosed the time where I had a more extensive
2:37:37PM relationship, and now they are just another client, which I
2:37:42PM don't disclose all of my clients.

2:37:31PM Q. Right. But you disclosed this one, just not that time
2:37:34PM period; am I right about that?

2:37:37PM A. I've disclosed here all the time periods where I've had an
2:37:42PM in-depth relationship with a company that went beyond an
2:37:49PM ordinary arms-length relationship that you might expect from
2:37:52PM someone who provides consulting services.

2:37:55PM Q. So just to put a fine point on this, even though it was
2:37:58PM your relationship with Microsoft that prevented you from
2:38:00PM looking at Apple's confidential documents, you didn't think

2:38:03PM you should disclose that on your C.V.; is that correct?

2:38:10PM **A.** I don't have a separate C.V. for this case. This is my
2:38:14PM C.V. in which I present my important relationships. And so on
2:38:20PM this C.V., I'm reporting the relationship in a time at
2:38:27PM which -- and it's a little bit generous, really, where my
2:38:32PM relationship with Microsoft was not just project to project
2:38:35PM or, you know, at their disposal, but we had an understanding
2:38:40PM that I would, on an ongoing basis, be available for them for
2:38:45PM consulting and participate in strategic decisions. That time
2:38:49PM actually really ended earlier than 2016, but it's being a bit
2:38:54PM generous in the interest of academic disclosure, where you
2:38:58PM want to make sure people understand your relationships.

2:39:03PM **Q.** Yeah, okay, Dr. Athey. I think I understand. Thank you.

2:39:06PM So at your deposition, you also refused to answer whether
2:39:11PM you're currently doing work for Microsoft that may bear on the
2:39:14PM issues in this case.

2:39:16PM Do you remember that?

2:39:18PM **THE COURT:** It goes to bias, Counsel.

2:39:20PM So I saw you stand before I -- and then I saw you move
2:39:25PM towards the microphone. The objection, to the extent you
2:39:28PM wanted to make it, is overruled. It goes to bias.

2:39:31PM Go ahead.

2:39:33PM **BY MS. DUNN:**

2:39:33PM **Q.** You can answer. Do you remember the question?

2:39:36PM **A.** If I recall my answer in the deposition, it was that I had

2:39:40PM a nondisclosure agreement with Microsoft and I hadn't sought
2:39:45PM their permission to disclose that, disclose the nature of my
2:39:51PM relationship in that. So....

2:39:57PM Q. Right. And you recall you were instructed by Epic's
2:39:59PM counsel not to answer? You recall that?

2:40:03PM A. Yes. My recollection is that they said that there was not
2:40:07PM a Microsoft attorney present to determine whether the
2:40:13PM information was confidential from Microsoft's perspective.

2:40:17PM Q. Okay. So today before the Court, do you still refuse to
2:40:21PM say whether your ongoing work for Microsoft bears on the
2:40:25PM issues in this case?

2:40:27PM THE WITNESS: I'd feel more comfortable answering if
2:40:30PM we had a closed session, since I don't have permission about
2:40:34PM the NDA, Your Honor.

2:40:38PM THE COURT: All right. We can do it at the end of
2:40:40PM the day.

2:40:42PM MS. DUNN: There has been -- there are documents that
2:40:45PM have been disclosed to us, and I don't believe that there is a
2:40:48PM sealing issue that we can potentially discuss. She can -- we
2:40:52PM can hold the nature of her work if she feels more comfortable,
2:40:56PM but this is documents that have already been disclosed.

2:41:00PM THE COURT: Okay.

2:41:00PM BY MS. DUNN:

2:41:02PM Q. Dr. Athey, in October 2020 -- actually, I should -- I'll
2:41:07PM start differently.

2:41:12PM We have a document that was produced to us two weeks ago
2:41:15PM after we moved to compel. Judge Hixson granted our motion,
2:41:20PM and this document was sent to us, along with a letter from
2:41:23PM Epic's counsel, saying that it had been redacted by Microsoft.

2:41:27PM And I'm just going to show you the first page of this
2:41:31PM document. It's Exhibit 5603.

2:41:36PM Do you see the first page?

2:41:39PM **A.** I'm sorry, I have two binders. Where should I look here?

2:41:40PM **Q.** That's right. The small binder is your deposition and the
2:41:45PM larger binder has exhibits.

2:41:47PM **A.** Great. And, I'm sorry, which number?

2:41:52PM **Q.** 5603.

2:41:53PM **MR. EVEN:** Sorry, what's the number?

2:41:53PM **MS. DUNN:** 5603.

2:41:53PM **MR. EVEN:** Where is that? Sorry.

2:42:07PM **THE WITNESS:** I'm sorry, there may be a tab missing.

2:42:11PM **THE COURT:** Yeah, that's not in the binder.

2:42:14PM **MS. DUNN:** So I only plan to use the title page,
2:42:19PM which we can display because there is no information on it.

2:42:22PM **BY MS. DUNN:**

2:42:23PM **Q.** All right. Dr. Athey, this is a presentation that you
2:42:26PM gave dated October 22nd of 2020. It's entitled "Apple App
2:42:33PM Store Restrictions and [Redacted] An Economic Perspective."

2:42:37PM Do you see that?

2:42:38PM **A.** Yes.

2:42:38PM Q. And these redactions, we were told by Epic's counsel, were
2:42:45PM applied by Microsoft.

2:42:47PM Have you seen this document in your files subsequent to
2:42:53PM its redaction by Microsoft?

2:43:01PM A. Yes.

2:43:04PM Q. And you do not deny that Microsoft has redacted out the
2:43:13PM word "Microsoft," correct?

2:43:18PM MR. EVEN: Your Honor --

2:43:19PM THE WITNESS: Honestly, I don't know what's under
2:43:20PM that [Redacted], so I don't think I should testify to what's
2:43:25PM there.

2:43:26PM BY MS. DUNN:

2:43:26PM Q. Do you recall the presentation at all?

2:43:28PM A. I do.

2:43:29PM Q. Okay. You recall that it talks about middleware?

2:43:32PM THE COURT: What's the objection, Counsel?

2:43:34PM MR. EVEN: Your Honor, I believe the order about
2:43:37PM producing this document required that the name of the client
2:43:43PM would be redacted. I don't believe that we have disclosed the
2:43:47PM name of the client to Apple.

2:43:48PM I understand that counsel for Apple can do the math and
2:43:53PM understand who the client is, but as far as I recall, at
2:43:57PM least, I don't believe we disclosed it or the client disclosed
2:44:01PM it, and I don't see why this needs to be done in open court
2:44:05PM and disclose that.

MS. DUNN: Your Honor, we have a letter from Epic's counsel saying the redactions had been applied directly by Microsoft.

MR. EVEN: If I can see the letter, that would be helpful, but -- and I will confer with my --

THE COURT: Okay. Well, I -- at this point, the cat's out of the bag.

MR. EVEN: I understand, Your Honor.

THE COURT: I don't know why they -- I don't know where that even came from, but -- that phrase, but it's out. The bell has rung. I like that one better.

Let's keep going.

BY MS. DUNN:

Q. All right. Dr. Athey, you recall this presentation, correct?

A. Yes.

Q. Great.

And it is, in our version, heavily redacted, but you recall that it talks about middleware, correct?

A. Yes.

Q. And you recall that it also talks about gaming, correct?

A. Yes.

Q. And you're not going to deny that this presentation from Microsoft about Apple's App Store restrictions relates directly to the issues in this case, are you?

2:45:01PM

A. No.

2:45:02PM

Q. And this is from October 22nd of 2020.

2:45:05PM

Was this before or after you were retained by Epic?

2:45:11PM

A. Before.

2:45:13PM

Q. All right. Your testimony involves something that you are

2:45:15PM

calling "middleware," and you said that that's short for

2:45:19PM

"economic middleware."

2:45:25PM

A. So I -- in my report, I define -- there is a concept which

2:45:30PM

I'm applying, and I use the term "economic middleware" and

2:45:34PM

"middleware" interchangeably.

2:45:37PM

Q. You've never seen the term "economic middleware" used in

2:45:43PM

any economic literature, correct?

2:45:45PM

A. I've seen -- the concept is described, as I testified

2:45:49PM

earlier. The specific term, no.

2:45:51PM

Q. Right. And you told us in your deposition that you came

2:45:54PM

up with the definition of "economic middleware" for this case.

2:45:58PM

Do you remember that?

2:46:06PM

A. So I need to see the exact words to make sure you're

2:46:10PM

quoting -- you're characterizing them correctly.

2:46:12PM

What I -- I'm sorry.

2:46:15PM

MS. DUNN: I'm happy to direct you --

2:46:18PM

THE WITNESS: Sure.

2:46:18PM

MS. DUNN: -- if Your Honor will permit, to

2:46:18PM

Dr. Athey's deposition. It's page 126, 7 through 15.

2:46:51PM

BY MS. DUNN:

2:46:52PM

Q. Dr. Athey, do you see that?

2:46:59PM

A. I'm sorry, which line were you referring to?

2:47:01PM

Q. Lines 7 through 15.

2:47:03PM

MS. DUNN: Your Honor, am I permitted to read it?

2:47:07PM

THE COURT: Well, not quite yet.

2:47:08PM

MS. DUNN: Once she gets there.

2:47:09PM

THE WITNESS: I got it.

2:47:12PM

THE COURT: Does that refresh your recollection that you said -- that you agreed with that characterization?

2:47:14PM

2:47:24PM

THE WITNESS: I'm sorry, I'm still not seeing the quote, and I would, with thought, characterize it slightly differently. But that's -- so --

2:47:26PM

2:47:30PM

2:47:34PM

BY MS. DUNN:

2:47:35PM

Q. I'm talking about the part where you say -- the question was asked to you: "This is a definition you came up with in connection with carrying out your analysis in this case?"

2:47:37PM

2:47:41PM

And you say: "Yes."

2:47:44PM

2:47:49PM

A. So I used a precise definition in my report to avoid any ambiguity about what I might mean.

2:47:54PM

2:47:56PM

Q. Okay.

2:47:56PM

A. And that was for this case, yes.

2:47:56PM

Q. We can move on.

2:48:01PM

All right. It is your opinion, Dr. Athey, that Apple imposes a set of technical and contractual restrictions that

2:48:02PM

2:48:07PM block the emergence of middleware, correct?

2:48:10PM **A.** Yes.

2:48:11PM **Q.** And those restrictions block third-party app stores on

2:48:16PM iOS, correct?

2:48:17PM **A.** Yes.

2:48:18PM **Q.** And those restrictions also block third-party payment

2:48:22PM systems for in-app purchases of digital goods and services,

2:48:25PM correct?

2:48:29PM **A.** Yes.

2:48:29PM **Q.** And your opinion is that both the technical and

2:48:31PM contractual restrictions independently block the emergence of

2:48:35PM middleware, correct?

2:48:41PM **A.** Independently and reinforcing one another in the sense

2:48:44PM that, you know, a contractual restriction can be enforced

2:48:49PM through technical means that prevent access to something, for

2:48:53PM example.

2:48:54PM **Q.** Okay. And so if Apple were to get rid of the contractual

2:48:58PM restrictions but continue the technical restrictions, that

2:49:01PM would not be sufficient for Epic. Apple needs to eliminate

2:49:05PM both sets of restrictions, correct?

2:49:09PM **A.** Eliminating some contractual restrictions don't really

2:49:15PM relate to -- directly to technical restrictions.

2:49:19PM But other contractual restrictions may be encoded, as I

2:49:27PM testified, in something, for example, like a database of, you

2:49:31PM know, who has access or who has permission to do certain

actions.

Q. The question is really just Apple would need to get rid of both kinds, and that's what Epic is asking for in this case.

A. Well --

Q. If you don't agree, just say you don't agree. But if you do agree, you can say that. We're on the clock.

A. It would be beneficial to competition to eliminate contractual -- some contractual restrictions on their own, and it would be additionally beneficial to eliminate further technical restrictions.

Q. Okay. And it's your opinion that the technical design of iOS makes it impossible for multiplatform app stores to operate on iOS, correct?

A. If I understood your question correctly, then no.

Q. So you say in your written direct testimony, "Apple makes it impossible for multiplatform app stores to operate on iOS."

And so it's your testimony that Apple's technical design has nothing to do with that?

A. I didn't -- I don't believe that that's what I said.

Q. Okay. "Apple's technical design makes it impossible for multiplatform app stores to operate on iOS."

Agree or disagree?

A. So the second question was does the technical design have anything to do with it, to which the answer is yes, it can.

2:51:11PM If the question is does its technical design prevent that,
2:51:23PM I guess, you know, I didn't -- I didn't -- I didn't provide a
2:51:33PM full analysis of the code, but I did point out that there are
2:51:40PM provisions on the iOS today that allow, say, developers or
2:51:47PM businesses or educational institutions to release apps in the
2:51:54PM iOS environment. And so that's -- if the question is is it
2:51:59PM possible --

2:51:59PM Q. Dr. Athey --

2:52:00PM (Simultaneous Colloquy.)

2:52:01PM Q. -- answer my question, and then your counsel can use his
2:52:05PM time for greater explanation. Okay?

2:52:07PM So my question is, due to -- we'll make it more general --
2:52:12PM due to aspects of the technical design of iOS, Apple does not
2:52:17PM deal with third-party app stores on iOS, correct?

2:52:20PM A. I guess it depends on how you characterize a third-party
2:52:29PM app store.

2:52:30PM Q. Well, why don't we characterize it how you have all the
2:52:32PM way through your report and your written direct testimony.

2:52:35PM A. Sure. So a cross-platform app store of the type that I
2:52:38PM described in my report is generally prohibited by Apple. Game
2:52:46PM subscription services under some conditions are able to
2:52:50PM operate. *Netflix* is able to operate.

2:52:56PM So there's -- I described the cross-platform app store not
2:53:02PM as a single thing that must have every characteristic of
2:53:09PM middleware, but, rather, that cross-platform app stores, as a

phenomenon, can offer different aspects of middleware.

But a general cross-platform app store is prohibited by Apple's conditions unless there is some kind of carve-out as we described.

Q. Okay. And not just Apple's conditions, but Apple's technical design, correct?

A. The word, I guess, "design" -- by "design," do you mean the -- you know, the high-level design, as in there's this piece over here and this piece over there, or do you mean would any line of code need to change? The answer depends on how -- what you mean, "design."

Q. Dr. Athey, have you reviewed Epic's proposed injunction in this case?

A. At a high level.

Q. Have you reviewed it?

A. Um --

Q. Have you read the injunction?

A. I've -- I reviewed it. I may have paid more attention to some parts than others, and so I'm not -- I don't have it memorized for sure.

Q. I'm just asking a "yes" or "no" question.

Have you read the injunction yourself, you've read it?

A. I've -- I've looked at it. I haven't -- "read" as in, like, am I ready to testify about different components of it?

Q. No, "read" as in "read." Surely this is a "yes" or "no"

2:54:37PM question. You've either read the injunction or you have not
2:54:40PM read the injunction.

2:54:42PM **A.** Parts of it.

2:54:43PM **Q.** Okay. All right. Dr. Athey, from your background in
2:54:46PM antitrust economics, it is your view that a refusal to deal is
2:54:49PM a form of exclusionary conduct, correct?

2:55:00PM **A.** Yes.

2:55:02PM **Q.** All right. And you understand that Apple has many APIs,
2:55:06PM correct?

2:55:08PM **A.** Yes.

2:55:08PM **Q.** And you understand that it's not possible to put an app
2:55:11PM onto the iOS platform without using Apple's tools and APIs,
2:55:15PM correct?

2:55:16PM **A.** Yes.

2:55:20PM **Q.** All right. And you understand that your economic
2:55:22PM middleware would need to connect to iOS through APIs and,
2:55:26PM therefore, have to use Apple's IP, correct?

2:55:34PM **A.** To the extent that -- to the extent that you characterize
2:55:37PM the APIs as IP, yes.

2:55:40PM **Q.** Do you think APIs are not IP?

2:55:44PM **A.** I'm not offering a legal opinion about whether they are or
2:55:47PM they're not. I'm just answering the question. So I'm not --
2:55:49PM I want to avoid testifying on a legal matter.

2:55:52PM So if we said that APIs are required to connect, we
2:55:59PM could -- I mean, do you mean a patent? Do you mean trade

2:56:03PM secrets? Do you mean -- you know, there's -- so I just want
2:56:06PM to make sure I'm being clear. Sorry.

2:56:08PM Q. Okay. But you understand that your economic middleware
2:56:11PM would need to connect to iOS through Apple's APIs, and to the
2:56:16PM extent APIs are intellectual property, you would agree with
2:56:19PM that, correct?

2:56:21PM A. Yes.

2:56:21PM Q. All right. And you understand that Apple would need to
2:56:23PM license its IP to multiplatform app stores as a remedy in this
2:56:28PM case.

2:56:35PM A. Yes.

2:56:37PM Q. And here is a question: In your but-for world, are you
2:56:43PM saying that Apple can or cannot sue for patent infringement
2:56:47PM third-party app stores that come on to iOS?

2:56:52PM MR. EVEN: Objection, Your Honor.

2:56:52PM THE WITNESS: I'm sorry, I -- whether or not somebody
2:56:55PM can sue is not -- is not -- is not my expertise.

2:57:00PM BY MS. DUNN:

2:57:01PM Q. Right. I'm just -- Doctor, what I'm trying to get at is
2:57:04PM you're imagining a world in which Apple needs to license its
2:57:10PM IP to third parties.

2:57:11PM And what I want to understand is in your world that you
2:57:16PM posit, that you described, what's the plan? Is Apple going to
2:57:20PM be able to -- is the answer that they should just sue
2:57:22PM everybody that comes onto the platform for patent

infringement? Have you thought about that?

A. I don't -- I'm fairly certain I didn't propose that Apple sue everyone on the platform, no.

Q. That's not something you thought about?

A. If you're asking whether I thought about how it can work to have a platform with apps on it. Windows and Mac are --

Q. I'm --

A. I'm sorry. You asked if I had thought about it --

Q. I'm sorry. I --

A. -- and so -- you just want a yes, that I thought about it.

Q. Yes.

A. Okay. Sorry. Yes, I thought about it.

Q. All right. So in your direct testimony, you discussed quite a lot about app-related switching costs, including the cost of repurchasing apps and in-app purchases.

Do you remember that?

A. Yes.

Q. And your opinions about anticompetitive effects relate to switchings costs at a high level, directly or indirectly, correct?

A. Yes.

Q. And you're aware, aren't you, that there is an extensive body of economic literature around switching costs?

A. Yes.

Q. And you cited no academic literature directly focused on

2:58:44PM switching costs in your testimony, correct?

2:58:46PM **A.** That's correct.

2:58:46PM **Q.** Okay. And actually, in your report, you relied on only
2:58:49PM three academic sources. One is an article about Android in
2:58:54PM competition in the European Competition Journal; second is an
2:58:59PM article about online streaming and music consumption; the
2:59:04PM third is an article that you wrote with others about Apple
2:59:07PM Pay; and the fourth, generously construed as an academic
2:59:11PM source, is Walter Isaacson's Steve Jobs biography.

2:59:16PM That's -- those are the academic sources that you list in
2:59:20PM your report?

2:59:21PM **A.** That sounds right.

2:59:22PM **Q.** Okay. And you don't quantify yourself the time costs and
2:59:25PM other costs of identifying and installing apps on a new mobile
2:59:28PM operating system platform, correct?

2:59:31PM **A.** I presented facts relevant to that, but I didn't come with
2:59:39PM a bottom-line number.

2:59:42PM **Q.** I mean, we discussed this in your deposition. You didn't
2:59:44PM quantify it, correct?

2:59:46PM **A.** Correct.

2:59:47PM **Q.** Right.

2:59:47PM And you don't have surveys or empirical data that say
2:59:52PM switching costs outweigh porting costs, correct?

3:00:03PM **A.** I'm sorry, switching -- you're asking me about switching
3:00:07PM costs outweigh porting costs? I just want to make sure I

understood the question.

Q. Sure. On your direct exam, you talked about switching costs and porting costs, and I'm just asking you whether -- my understanding is you've offered no empirical data that say that the costs of switching outweigh the cost of porting or trying to form any relationship between these two things.

A. Well, they both independently operate to support -- to support market power in mobile platform competition, so....

Q. I'm just asking if you quantified either.

A. No.

Q. Okay. You also did not quantify the amount of time it takes to switch from an iPhone or an Android or the dollar estimate for switching between an iPhone and Android, correct?

A. So I -- to be -- make sure I'm answering fully, the email that I proposed had a specific dollar value proposed by Apple executives, but in my report, I did not do that quantification.

Is that -- was that the question?

Q. You're talking about the email you showed us from 2013?

A. Which --

Q. Right.

A. So I -- were you asking me about my report or my testimony? I'm sorry.

Q. I'm asking whether you did anything to quantify a dollar estimate for any amount of time it takes to switch between

3:01:32PM iPhone and Android. Did you do any of that work?

3:01:36PM **A.** No.

3:01:37PM **Q.** Thank you.

3:01:37PM You also did not calculate the average amount of app
3:01:42PM purchases that must be repurchased in moving to a new system,
3:01:47PM correct?

3:01:47PM **A.** I did not calculate that average, no.

3:01:50PM **Q.** And you said on direct to the Court that the average user
3:01:56PM has a hundred apps, but the number of apps that users actually
3:02:01PM use is far lower than that, somewhere in the 30s, correct?
3:02:07PM And that comes from the same source material where you got the
3:02:10PM number 100.

3:02:11PM Are you aware of that?

3:02:14PM **A.** Yeah, that sounds about right --

3:02:16PM **Q.** Okay.

3:02:16PM **A.** -- although the -- that -- that statement by itself is not
3:02:21PM fully precise because you have to define what it means to use
3:02:25PM regularly and so on. But I'm not disputing the
3:02:31PM characterizations you have given there.

3:02:33PM **Q.** Right. And you're aware that many apps are free to
3:02:36PM download, correct?

3:02:37PM **A.** Yes, right.

3:02:37PM **Q.** And you said on direct that many apps are available on
3:02:41PM both platforms, correct?

3:02:47PM **A.** Yes.

3:02:49PM Q. Okay. Okay. Let me -- if you would turn in your binder,
3:03:01PM Dr. Athey, to Exhibit 5612. And this is an article that you
3:03:16PM cite in your report in support of your opinions about
3:03:18PM switching.

3:03:19PM You say at paragraph 86 in your report that the user has
3:03:28PM to manually search for her apps, reinstall them, and
3:03:32PM repurchase those that change -- I'm sorry, charge an upfront
3:03:35PM price, and then this is the article that's footnoted to that.

3:03:39PM If you look under "Apps" in this article, there's an -- on
3:03:48PM page 7, it says under "Apps": "The bad news: Any apps you've
3:03:58PM installed on your iPhone won't automatically transfer over to
3:04:02PM Android and any apps you paid for on iOS will likely have to
3:04:07PM be purchased again."

3:04:08PM Do you see that?

3:04:09PM A. Yes.

3:04:09PM Q. All right. So that's what you cite in your testimony --
3:04:12PM your report, I'm sorry.

3:04:14PM And then the next paragraph offers some good news. It
3:04:18PM says: "These days, most major productivity apps are readily
3:04:21PM available on both platforms, and once you're all set up with
3:04:26PM Android, all of your apps and app data will automatically sync
3:04:29PM with Google servers and follow you to any future Android
3:04:34PM devices."

3:04:34PM Do you see that?

3:04:36PM A. Yes.

3:04:36PM Q. Right. So the report cites the bad news and leaves out
3:04:40PM the good news, but I know that you are aware that there are
3:04:42PM tools for switching.

3:04:44PM You are aware of that? "Yes" or "no"?

3:04:47PM A. Yes.

3:04:49PM Q. Okay. So if you look, then -- actually, this may require
3:04:55PM switching binders, so I will read it to you. Paragraph 46 of
3:04:57PM your report says:

3:04:59PM "Users will need to check to see if their other
3:05:03PM existing apps are available on the new platform. For
3:05:07PM example, developers frequently launch new apps on
3:05:12PM iOS before Android due to the higher spending on
3:05:14PM apps and in-app purchases by iOS users."

3:05:18PM Do you see that?

3:05:19PM A. I'm not looking at it now, but I believe --

3:05:22PM Q. I apologize. That's --

3:05:22PM A. That's fine.

3:05:22PM Q. -- paragraph 46 of your report.

3:05:24PM All right. So in support of the statement that
3:05:27PM "developers frequently launch new apps on iOS before Android
3:05:30PM due to higher spending on apps and in-app purchases," you cite
3:05:36PM an article from The Guardian, and that's Footnote 15.

3:05:38PM And so we can show that to you, as well. That is
3:05:44PM Exhibit 5605 in your exhibit binder. And if you turn to
3:05:57PM page 3, there's a heading that says "Developer Concerns About

Profits and Piracy."

And if you look at the paragraph in the middle of the screen here, it says: "It tends to be a two-prong thing. First, the perception that Android users are less likely to spend money on or in apps; and, second, the belief that paid apps in particular suffer from crippling levels of piracy on Android."

Then it goes on to say: "Is this fair? Piracy on Android is a fact. Developers of paid apps who keep a close eye on their analytics often notice lots more people using them than have actually bought them on a store like Google Play. Games suffer in particular from this."

So in your report, Dr. Athey, you talk about the first prong, but you leave out the second prong even though it appears in the same sentence, the part about crippling piracy on Android.

Was there a particular reason for that, that you omitted the part about the crippling levels of piracy on Android?

A. Sorry. Just rereading that.

The -- in my report, I'm talking about, at that point, the users' choices and the frictions that the user faces when moving between the two systems, as well as the -- between iPhone and Android, as well as the costs that they may incur and whether or not the apps would be there.

Q. All right.

3:08:05PM

A. So the piracy on Android is not directly relevant to that -- to that point.

3:08:09PM

3:08:11PM

Q. All right. Let me read you the sentence from your report.

3:08:13PM

"Developers frequently launch new apps on iOS

3:08:17PM

before Android due to higher spending on apps and

3:08:20PM

in-app purchases by iOS users."

3:08:23PM

You say that to explain why users need to check whether

3:08:26PM

those apps are available. So in your report, you're

3:08:30PM

explaining why developers launch new apps on iOS before

3:08:35PM

Android, and you say that that's due to higher spending on

3:08:37PM

apps and in-app purchases.

3:08:43PM

So you've taken this sentence. You've used half of it,

3:08:46PM

you've left out the other half --

3:08:48PM

A. So --

3:08:48PM

Q. -- in support of the same point. And I'm just asking you

3:08:53PM

if you realize that you did that.

3:08:57PM

A. So the first -- this article confirms a fact of which I am

3:09:03PM

aware across, you know, many years of experience. The fact

3:09:08PM

that iPhone users spend more than Android users is relevant

3:09:15PM

for understanding, you know, search engines and how they

3:09:20PM

monetize, it's important for understanding, you know, the

3:09:25PM

importance of developing -- spending more money on development

3:09:29PM

of an iPhone app than an Android app, and it's been important

3:09:34PM

for understanding the evolution of this industry from the

3:09:38PM

beginning.

3:09:38PM So I've been following this industry, you know, since the
3:09:41PM launch of the phones --

3:09:43PM Q. Right. That's --

3:09:43PM A. -- and so just -- you asked me why, so I'm trying to
3:09:48PM explain why -- because this fact that iPhone users spend more
3:09:54PM is a kind of established fact that comes up over and over
3:09:57PM across different settings.

3:10:02PM Q. So --

3:10:02PM A. So that's -- so piracy is something that, you know,
3:10:06PM there's an assertion here, but it's not the primary thing that
3:10:12PM would necessarily set the expectations of industry
3:10:16PM participants --

3:10:17PM Q. Right.

3:10:18PM A. -- in my opinion.

3:10:20PM Q. In your opinion.

3:10:20PM And so in your opinion, security, piracy, privacy, those
3:10:25PM issues, were not relevant, but this other -- the first half of
3:10:32PM this paragraph was.

3:10:35PM A. I don't think that's what I said.

3:10:36PM Q. Okay. So the word "security," Dr. Athey, does not appear
3:10:42PM at all in your written direct testimony; that's correct?

3:10:46PM A. I'll take your word for it.

3:10:48PM Q. Right. And you didn't mention it in your testimony today,
3:10:54PM and even though you've written about privacy yourself, how
3:11:03PM important that is, that also doesn't appear in your testimony,

3:11:06PM

correct?

3:11:11PM

A. I don't believe so, no.

3:11:13PM

Q. Right. And the point of showing you this article is that you focused on certain things but not others, even though in the industry, security and privacy, which you do not mention, are very important.

3:11:16PM

3:11:20PM

3:11:24PM

Do you disagree with that?

3:11:25PM

3:11:34PM

A. I don't think that's a completely fair characterization, because the reason that we're here to talk about competition, the reason competition is important is that we need competitive pressures to ensure that firms innovate and provide features that people want. Whether or not they have in the past, we want to make sure that they continue to innovate. And so I gave --

3:11:37PM

3:11:42PM

3:11:49PM

3:11:53PM

3:11:58PM

3:12:01PM

Q. And so do you --

3:12:04PM

3:12:05PM

A. -- I gave an opinion about this, which I said in my testimony --

3:12:09PM

3:12:10PM

Q. Dr. Athey, thanks.

3:12:10PM

A. Okay.

3:12:10PM

3:12:14PM

Q. Are you aware, then, that with regard to the competition analysis in this case, security and privacy are two of Apple's asserted procompetitive justifications for the restrictions that you discuss? Are you aware of that?

3:12:19PM

3:12:23PM

A. Yes.

3:12:26PM

3:12:26PM

Q. Okay. And did you hear Mr. Sweeney's testimony?

3:12:31PM

A. No.

3:12:31PM

Q. Okay. So you may not be aware that even he has said that

3:12:35PM

privacy and security are competitive differentiators for

3:12:38PM

Apple.

3:12:40PM

A. That sounds --

3:12:41PM

Q. Were you aware --

3:12:41PM

A. -- right.

3:12:42PM

Q. You agree with that, though?

3:12:44PM

A. Today, yes.

3:12:46PM

Q. Okay. In your direct testimony, you also talked about

3:12:50PM

mixing and matching in family groups.

3:12:52PM

Do you recall that?

3:12:53PM

A. Yes.

3:12:53PM

Q. All right. You didn't do an independent analysis,

3:12:54PM

however, of what percentage of families already mix and match

3:12:58PM

within the family group, right?

3:13:04PM

A. No.

3:13:05PM

Q. And, in fact, as you told us in your deposition, it's very

3:13:10PM

common today for families to have devices in addition to

3:13:12PM

phones that run different operating systems.

3:13:14PM

You recall that?

3:13:18PM

A. Yes, for example, phones and PCs.

3:13:20PM

Q. Right. And your testimony is that when something

3:13:23PM

facilitates synchronization across platforms, it reduces

3:13:23PM

mixing and matching costs, correct?

3:13:23PM

THE REPORTER: Excuse me. I'm sorry. I need you to repeat that.

3:13:23PM

3:13:23PM

MS. DUNN: Sorry.

3:13:32PM

THE COURT: Two minutes, Ms. Dunn.

3:13:34PM

BY MS. DUNN:

3:13:34PM

Q. Well, I want to spend my two minutes clearing up something that we've been talking about for -- since -- like the past two weeks.

3:13:36PM

3:13:39PM

3:13:40PM

You agree V-Bucks can be purchased on one platform and spent on another, correct?

3:13:44PM

3:13:49PM

A. Not -- not all platforms.

3:13:52PM

3:13:55PM

Q. But -- right. Not on Sony and not Nintendo, but on other platforms, V-Bucks can be spent -- bought on one platform and spent on another.

3:13:59PM

3:13:59PM

You know that, right?

3:14:01PM

A. On some, yes.

3:14:02PM

3:14:05PM

Q. Okay. And that's not just true on a PC; that's also true on a web browser, which is right on the phone, correct?

3:14:12PM

A. The phones have a web browser, yes.

3:14:14PM

Q. Right. And you can buy V-Bucks on the web browser.

3:14:17PM

You know that, right?

3:14:19PM

A. Yes.

3:14:19PM

3:14:23PM

Q. Okay. And so even if you are out and about, you can buy V-Bucks on your iPhone, not through the app store, correct?

3:14:27PM

A. I don't know if you've ever tried to do that with a baby

on your shoulder, but in principle, yes.

Q. I assure you I've tried to do everything with a baby on my shoulder.

So the same thing with the *New York Times*. You can subscribe through the web browser on the phone, correct?

A. If you're aware that that is a possibility.

Q. Right. And you have no data to say that consumers don't know that's a possibility. You've done a study of that?

A. I have -- I have not studied the percentage of consumers who are aware of their -- their options.

Q. Right. And the web browser itself is middleware.

You agree with that?

A. Yes.

THE COURT: Okay. It's 3:15.

MS. DUNN: Thank you, Your Honor.

THE COURT: So you may step down for the day, Professor Athey. We start -- we'll have you back on the stand somewhere between 8:00 and 8:15. You can leave those binders there and step down.

THE WITNESS: Thank you, Your Honor.

THE COURT: We have -- I have a calendar in 15 minutes, so we will stand in recess until 8:00 a.m. unless there is something urgent I need to deal with.

MR. EVEN: Nothing here, Your Honor.

MR. BORNSTEIN: Nothing, Your Honor.

MS. DUNN: Nothing, Your Honor. Thank you.

THE COURT: Okay. Thank you very much. We will stand in recess until 8:00 a.m.

(Proceedings concluded at 3:15 P.M.)

CERTIFICATE OF REPORTERS

We, Diane E. Skillman and Pamela Hebel, certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter. We further certify that we are neither counsel for, related to, nor employed by any of the parties to the action in which this hearing was taken, and further that we are not financially nor otherwise interested in the outcome of the action.

_____/S/DIANE E. SKILLMAN____

Diane E. Skillman, CSR, RPR, FCRR

_____/S/ PAMELA HEBEL____

Pamela Hebel, CSR, RMR, FCRR

Tuesday, May 11, 2021

VOLUME 8

Pages 1827 - 2098-A

UNITED STATES DISTRICT COURT

NORTHERN DISTRICT OF CALIFORNIA

Before The Honorable YVONNE GONZALEZ ROGERS, Judge

EPIC GAMES, INC.,)	
)	
Plaintiff,)	NO. C-20-5640 YGR
)	
vs.)	Wednesday, May 12, 2021
)	
APPLE, INC.,)	Oakland, California
)	
Defendant.)	BENCH TRIAL
)	
APPLE, INC.,)	
)	
Counterclaimant,)	
vs.)	
)	
EPIC GAMES, Inc.,)	
)	
Counter-Defendant.)	
)	

REPORTER'S TRANSCRIPT OF PROCEEDINGS

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Plaintiff's Witnesses:**Page****VOL.****Athey, Susan**

Cross-Examination by Ms. Dunn (resumed)

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Defendant's Witnesses:**Schmalensee, Richard**

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Cross-Examination by Mr. Bornstein

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Redirect Examination by Mr. Swanson

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Recross-Examination by Mr. Bornstein

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Lafontaine, Francine

Direct Examination by Ms. Dunn

2001

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Cross-Examination by Mr. Bornstein

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Hitt, Lorin

Direct Examination by Ms. Richman

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Plaintiff's Exhibits:**EVD.****VOL.****Defendant's Exhibits:****EVD.****VOL.**

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8

1 Wednesday, May 12, 2021

8:00 a.m.

2 P R O C E E D I N G S

3 **THE COURT:** Let's go on the record and see who we
4 have.

5 Ms. Stone.

6 **THE CLERK:** All right.

7 Calling civil action 20-5640, Epic Games, Inc. versus
8 Apple, Inc.

9 Counsel, please state your appearances.

10 **MS. FORREST:** Good morning, Your Honor. Katherine
11 Forrest for Epic.

12 **THE COURT:** Good morning, Ms. Forrest.

13 **MR. EVEN:** Good morning, Your Honor. Yonatan Even
14 for Epic.

15 **THE COURT:** Good morning.

16 **MS. KLOSS:** Good morning, Your Honor. Lauren Kloss
17 for Epic.

18 **THE COURT:** Good morning.

19 **MS. COSCIA:** Good morning, Your Honor. Monica Coscia
20 for Epic Games.

21 **MR. DIESSEL:** Good morning, Your Honor. Ben Diessel
22 for Epic Games.

23 **THE COURT:** So it's -- we have a new one. Monica
24 Coskia [phonetic]? Is that right?

25 **MS. COSCIA:** Cosia [phonetic], Your Honor. Yes.

1 **THE COURT:** Ms. Dunn, you may proceed with your
2 cross.

3 **MS. DUNN:** Thank you, Your Honor.

4 For the court reporter, Karen Dunn for Apple.

5 **SUSAN ATHEY,**
6 called as a witness for the PLAINTIFF, having been duly sworn,
7 testified as follows:

8 **CROSS-EXAMINATION (RESUMED)**

9 **BY MS. DUNN:**

10 **Q.** Welcome back, Dr. Athey. Good morning.

11 **A.** Good morning.

12 **Q.** So yesterday we left off talking about how the web browser
13 is middleware. Do you remember that?

14 **A.** Yes.

15 **Q.** And you have said that third-party app stores are
16 middleware.

17 You've said that, correct?

18 **A.** Correct.

19 **Q.** All right.

20 And a store within a store is also middleware, correct?

21 **A.** Yes. To -- to be clear, you know, middleware can have
22 many characteristics so, you know, different types of
23 middleware will -- will function in different ways, so I'm not
24 trying to define "middleware" by one of those specific
25 examples.

1 Q. Okay. But to the extent that you use this --

2 A. Yes.

3 (Simultaneous colloquy.)

4 THE COURT: One at a time, please.

5 BY MS. DUNN:

6 Q. To the extent that you use this phrase, you would include
7 store within a store within your general notion of middleware,
8 correct?

9 A. Yes.

10 Q. And in your opinion, app stores can differentiate by
11 specializing in narrow categories of content, like games,
12 correct?

13 A. Yes.

14 Q. And in your report and in your written testimony, you
15 provide three case study examples. One is Steam. One is
16 GameClub. And one is Epic Game Store, correct?

17 A. Yes.

18 Q. All right.

19 So we'll talk about Steam and GameClub in a moment, but
20 first, to be clear, you describe Epic Game Store as a
21 personalized gaming-focused multi-platform app store; is that
22 right?

23 A. Yes.

24 Q. And in your written direct testimony, you say that Apple
25 excludes multi-platform app stores like Steam, correct?

1 **A.** Yes.

2 **Q.** And in your written direct testimony, you say Steam is a
3 specialized multi-platform app store. Users can store their
4 purchase content in their Steam Library, store their payment
5 methods in their Steam Wallet, chat and text with other users
6 in real time with Steam Chat, and that by enabling users to
7 access games and purchase game content, Steam reduces users'
8 switching and mixing and matching costs, correct?

9 **A.** I don't have it in front of me, but that sounds -- that --
10 yes, I agree with the content.

11 **Q.** Great.

12 And I'm not --

13 **A.** Yeah.

14 **Q.** It's just for time.

15 **A.** Yes.

16 **Q.** I would be happy to put it up for you.

17 **A.** No problem.

18 **Q.** And in your direct testimony, you said that this is
19 available on the Mac, on Windows and on Linux, correct?

20 **A.** Yes.

21 **Q.** Okay. So I'd like to now put on the screen a slide that
22 shows what happens when you search Steam in Apple's App Store.

23 And I'm asking Mr. Spalding to put that on the screen.

24 (Demonstrative published.)

25 **MS. DUNN:** I don't know if your screen looks like

1 mine, but the color seems --

2 **THE COURT:** Color seems off.

3 **MS. DUNN:** -- very purple.

4 **THE WITNESS:** Thank you. I see it. Thank you.

5 **BY MS. DUNN:**

6 **Q.** Okay.

7 And I don't know if you can see this, given the --

8 **THE COURT:** Is that us, or is that you, Mr. Spalding?

9 **MR. SPALDING:** I believe the court.

10 **THE COURT:** Okay. We'll try to --

11 Do you have a physical copy of this one, Ms. Dunn?

12 **MS. DUNN:** We do.

13 This is at -- at Defense Exhibit 5621 in your binder.

14 **THE COURT:** We'll try to fix that.

15 **MS. DUNN:** Thank you, Your Honor.

16 (Exhibit published.)

17 **MS. DUNN:** All right. So, Dr. Athey, if you turn to
18 Defense Exhibit 5621 in your binder.

19 **A.** Yes.

20 **Q.** So if you look at this screenshot, you can see that we
21 search "Steam" in the Apple App Store. "Steam" is in the
22 search bar. And you can see that what comes up are three
23 Steam native apps available in the App Store. One is called
24 Steam Mobile. One is called Steam Link. And the third is
25 called Steam Chat.

1 Do you see that?

2 A. Yes.

3 Q. Okay. Now, if you'll turn to Defense Exhibit 5616.

4 (Exhibit published.)

5 BY MS. DUNN:

6 Q. This is a screenshot from Steam's website about Steam
7 Mobile. And it describes Steam Mobile, which it also calls
8 "the Steam App," and you can see in the screenshot there's a
9 picture of an iPhone and an Android phone.

10 Do you see that?

11 A. Yes.

12 Q. All right. It also says you can download the Steam App on
13 the App Store and on Google Play.

14 Do you see there at the bottom?

15 A. Yes.

16 Q. Okay. And towards the top, it says that with the app, you
17 can manage your account, shop, and stay up to date with games
18 in the community.

19 Do you see that?

20 A. Yes.

21 Q. Okay. And so prior to your report, were you aware that
22 this app existed?

23 A. (Reviewing document.)

24 Sorry. I'm just trying read all the -- all the material
25 here with the different apps. These --

1 Q. I'm just --

2 A. I'm sorry.

3 Q. -- asking at this point about the Steam Mobile app.

4 Were you aware prior to your report that this app existed?

5 A. (Reviewing document.)

6 Yes.

7 Q. Yet you did not mention this in your report or in your
8 testimony; is that correct?

9 A. This -- sorry.

10 Q. Dr. Athey, this is just a "yes" or "no."

11 This is not mentioned in your report, and it was not
12 mentioned in your testimony, either your written direct
13 testimony or in your testimony yesterday, correct?

14 A. My testimony describes the functionality, but I -- I
15 didn't specifically describe this app.

16 Q. Right. You did not mention that there is an app in the
17 App Store called Steam Mobile, correct?

18 A. Correct.

19 Q. And you did not mention that there was an app in the App
20 Store called Steam Link, correct?

21 A. Correct.

22 Q. And you did not mention, just to finish this out, that
23 there's an app in the App Store called Steam Chat, correct?

24 A. Correct.

25 Q. And yet you say you were aware of this before yesterday,

1 correct?

2 **A.** Yes.

3 **Q.** Okay.

4 All right. So --

5 **THE COURT:** So, Ms. Stone, I -- I'm being told that
6 we have to restart the system, so let's put a pause on your
7 clock. And we should go ahead and reboot it.

8 **THE CLERK:** Okay. All right.

9 **MS. DUNN:** Thank you, Your Honor.

10 (Pause in the proceedings.)

11 **THE COURT:** So while we're waiting here, if I had a
12 jury, I would tell some kind of joke and they would laugh
13 because I'm a judge and I'm -- even though I'm not funny.

14 But I do want to correct for the record -- I know there
15 are lots -- lots of people are taking -- they're all trying to
16 figure out who all of us are. I don't want to be in trouble
17 with my son, so I'll tell everybody he's an aerospace
18 engineer, not an aeronautical engineer. I'd like the record
19 globally to be corrected. He's an aerospace engineer. I
20 misspoke one day and, apparently, that got picked up, so
21 really don't want to be in trouble with him.

22 So okay. Now we have our thing back.

23 Thanks for that.

24 **MS. DUNN:** Thank you, Your Honor.

25 **THE COURT:** All right. Ms. Dunn, proceed.

1 **BY MS. DUNN:**

2 **Q.** All right. Dr. Athey, are you aware that users can buy
3 games and manage their Steam Wallet account through this app?

4 **A.** So this -- this app allows you, as it says on the -- on
5 the exhibit, to browse the Steam catalog of Windows, Mac, and
6 Linux titles from your phone.

7 **Q.** Right. I'm not asking you to read the screen. I'm just
8 asking you to tell me whether you're aware that users can buy
9 games and manage their Steam Wallet account through this app.
10 That's the question.

11 **A.** And -- I think the clarification is that they -- they
12 can't buy games -- they can't buy iOS games. They can buy
13 Windows, Mac, and Linux games, which are games.

14 **Q.** Right.

15 And you're aware, aren't you, even though it doesn't say
16 so here, that users can manage their Steam Wallet account
17 through this app, correct?

18 **A.** Yes.

19 **Q.** All right.

20 Let's move to the Steam Link app in the App Store, so I'll
21 ask you to turn to Defense Exhibit 5617.

22 (Exhibit published.)

23 **BY MS. DUNN:**

24 **Q.** Now, 5617 -- excuse me -- is a Tweet that Steam sent out
25 when they launched Steam Link. This Tweet from Steam says the

1 Steam Link app is now available for free on all iOS and -- for
2 all iOS and Apple TV users. The app allows gamers to stream
3 their Steam library to their iPhone, iPad, and Apple TV.

4 And you can see on this Tweet that there's a picture of a
5 person playing Steam games on their iPhone using a controller
6 attachment, which are available in the market today.

7 You see that, correct?

8 **A.** Yes.

9 **Q.** Okay.

10 And are you aware that through Steam Link, iOS users can
11 play Steam games on their iPhones and iPads through Steam
12 Link, which is an app on iOS.

13 You're aware of that.

14 **A.** Yes.

15 **Q.** Right.

16 And you said that you were aware prior to yesterday that
17 this existed; is that -- that's what you said?

18 **A.** Yes.

19 **Q.** Okay.

20 All right. Will you turn to Exhibit 5622.

21 (Exhibit published.)

22 **BY MS. DUNN:**

23 **Q.** All right. 5622 is a screenshot also from the Steam
24 website, and it describes Steam Link in more detail. And it
25 says -- if you look under the word "install," it says "install

1 the App to play your Steam games."

2 And then in extremely small print, it says under "Steam
3 Link," "stream games from your computer with Steam."

4 Do you see that?

5 **A.** Yes, I can see that.

6 **Q.** Okay. That's in -- in the -- it's written there in the
7 mobile device. You see that?

8 **A.** I can see it, yes.

9 **Q.** Okay.

10 And on the right, it says "extend your Steam gaming
11 experience to your mobile device, TV, or other PC. All you
12 need is a local network or an Internet connection. In
13 addition, Steam Link App now supports remote play together.
14 Now you can join games hosted on a friend's PC just by
15 clicking a link," correct?

16 You see that.

17 **A.** Yes.

18 **Q.** Okay.

19 And this also was not mentioned in your report, your
20 written direct testimony, or your testimony yesterday,
21 correct?

22 **A.** So my report describes the overall set of features
23 associated with Steam. But the -- the details of -- of
24 streaming from your own PC on to your device, I -- I don't
25 believe I've -- I put in those details, although I'd need to

1 check to be sure.

2 Q. Right.

3 And you -- all those details you mentioned, the ones that
4 you described, like using Steam Wallet, purchasing games,
5 playing your Steam games, that you can do through these apps
6 in the App Store, that was not mentioned in your report.

7 There's no place where you say Steam has apps in the App
8 Store, correct?

9 A. So I would need to review to see exactly what's there.
10 I've referenced the -- the Steam documentation and so on.

11 But I would need to -- to -- to double-check to see
12 exactly which details are -- are included.

13 Q. Okay. Do you have any idea how many times a day Steam
14 Link is downloaded?

15 A. I don't know that number now.

16 Q. Okay.

17 If you'll turn to Defense Exhibit 5601.

18 (Exhibit published.)

19 BY MS. DUNN:

20 Q. -- in your binder. And if you -- it's an article called
21 "75 Steam statistics from 2019 and 2020."

22 This is actually one of the source materials for your
23 report. It's footnote 62 to paragraph 36, I believe.

24 And according to this source material, it says that Steam
25 Link, which allows users -- this is on page 3 -- it says that

1 Steam Link, which allows users to play games on their mobile
2 devices, has been installed 2 million times.

3 Do you see that?

4 **A.** Yes.

5 **Q.** And right beneath that, it says, on average Steam Link is
6 downloaded at around 52,000 times daily.

7 Do you see that?

8 **A.** Yes.

9 **Q.** Okay.

10 And so you don't have any reason to -- to disagree with
11 that, do you?

12 **A.** No.

13 **Q.** Okay. If we could go to Defense Exhibit 5623.

14 (Exhibit published.)

15 **BY MS. DUNN:**

16 **Q.** This is a screenshot of Steam Chat also from the Steam
17 website. This is another app that you can download from the
18 App Store and on Google Play.

19 You can see the icons that say "download on the App Store"
20 and "get it Google play."

21 You see that?

22 **A.** Yes.

23 **Q.** All right. And Steam Chat, it says, is a lightweight app
24 focused on chatting with friends and groups.

25 You see that?

1 **A.** Yes.

2 **Q.** It offers rich chat, which always makes me think of
3 Mr. Doren.

4 Do you see that?

5 **A.** I'm sorry. Rich chat.

6 **Q.** Rich chat.

7 **A.** Yes. Yes.

8 **Q.** Okay.

9 And with Steam -- with the Steam Chat App, users can
10 accept invites and then play with their friends in Steam Link
11 on their iPhone.

12 Are you aware of that?

13 **A.** Yes.

14 **Q.** Okay. And, in fact, that's what's happening in this image
15 over here on the iPhone, it says, "Ben from school has invited
16 you to play, and all you need to do is click that link and
17 you're in the game."

18 Do you see that?

19 **A.** I see that you can accept the invite from your personal
20 computer, PC.

21 **Q.** Right.

22 So you're not aware that if you click the link, you're in
23 the game?

24 **A.** If -- if I have a PC with me. Not if I'm at school if --
25 if I'm a kid or if I'm in the bus. But if I was using a PC

1 and had that available.

2 Q. Well, Dr. Athey, you've never used this, correct?

3 A. I've used Steam. But I haven't used Steam Chat.

4 Q. Right. Or Steam Link.

5 And if you had used them, you would know actually that you
6 don't need your PC with you. Your PC could be anywhere to do
7 this, so --

8 A. So -- I'm sorry. I just -- I'm reading from the side,
9 "you can accept this invite from your PC." So the -- the game
10 is being run in the PC. The game -- the PC needs to be on if
11 it's -- you know, to -- to use this functionality.

12 So you need to have the -- if you're streaming a game from
13 your PC, the PC is involved.

14 Q. But it -- but you said --

15 A. Correct.

16 Q. -- it needs to be with you. And that is not correct.

17 Are you aware of that?

18 A. So if it's -- you need to be able to have it on. So if
19 you -- if -- yeah, if you have a laptop, for example, you
20 would need to be able to turn on your laptop, so I suppose if
21 you -- you know, if you've -- if laptop isn't being used by
22 anybody else and it's been -- it's been left on, that would be
23 a different scenario.

24 But if you're -- if you were carrying your laptop -- if
25 your laptop is in your locker or if your laptop is in your

1 briefcase and it's off, then you can't -- you -- you would
2 need to make it available for that purpose.

3 **Q.** Right.

4 And I'm just saying you had said you need to have it with
5 you. That's not correct.

6 And if you don't know, it's okay.

7 **A.** Sorry. So you --

8 **Q.** I'm just asking --

9 **A.** Yes.

10 **Q.** -- whether you know that you don't need to have it with
11 you?

12 **A.** Not necessarily. Depends on the circumstance.

13 **THE COURT:** She's a professor at Stanford. She
14 can -- there isn't any harassment going on here, Mr. Even,
15 so --

16 **MR. EVEN:** Okay.

17 **THE COURT:** So she can the answer questions, or she
18 can argue the way she is. There's nothing objectionable.
19 This is cross-examination.

20 **MS. DUNN:** Thank you, Your Honor.

21 **Q.** Dr. Athey, do any other companies have technologies like
22 Steam Link?

23 **A.** So if you're asking is it possible -- if you're talking
24 about, like, a functionality to do remote desktop, yes.

25 **Q.** Okay.

1 And so you must be aware that Playstation and XBox both
2 have native Apps on the iOS that allow playing of their games.

3 You're aware of that?

4 **A.** Again, that's a -- that's a broad statement, so there are
5 specific ways that you could, for example, play a game on a
6 device that you own and -- and through a -- this kind of
7 remote-desktop-type functionality.

8 **Q.** Okay.

9 I'd just like to put on the screen, and then we can move
10 on, DX5624. This is Playstation's remote play from
11 Playstation.com.

12 Do you see that?

13 (Exhibit published.)

14 **THE WITNESS:** Yes.

15 **BY MS. DUNN:**

16 **Q.** Okay.

17 And then if we can just put up Defense Exhibit 5620.

18 (Exhibit published.)

19 **BY MS. DUNN:**

20 **Q.** This is Microsoft's XBox remote play, which shows somebody
21 playing with a controller on a iPhone.

22 Do you see that?

23 **A.** Yes.

24 **Q.** Okay.

25 All right. Dr. Athey, moving on from Steam, your third

1 example is GameClub, which is currently available as a native
2 App on iOS, correct?

3 **A.** Yes.

4 **Q.** All right.

5 And if you'll turn in your binder to Defense Exhibit 5608.

6 (Exhibit published.)

7 **BY MS. DUNN:**

8 **Q.** On page 2.

9 **A.** (Reviewing document.)

10 **Q.** And I'm just reading from the description here. This is
11 from GameClub's press kit.

12 They say that GameClub is the all-you-can-play
13 subscription home for mobile's top premium games, delivering
14 unlimited exclusive access to over a hundred universally
15 acclaimed titles, playable on both iOS and Android with new
16 games added every week. These games are optimized for the
17 latest mobile devices and have no apps or in-app purchases as
18 part of a single subscription that can be shared with up to 12
19 family members.

20 And you can see at the end, that costs 4.99 a month, and a
21 GameClub subscription, it says, is completely cross-platform
22 with a single log-in that works anywhere.

23 Do you see that?

24 **A.** Yes. I believe that's the way I described it in my
25 report.

1 Q. I agree with that.

2 You also know that one GameClub account carries over
3 across both Android and iOS, correct?

4 A. Yes, that's a key feature.

5 Q. Right.

6 And you also know that GameClub has family-sharing, which
7 means a user can buy a game on iOS, and then their kids can
8 play on Android or vice versa, correct?

9 A. Absolutely. Again, that's a key feature.

10 Q. Right.

11 And GameClub is a direct competitor to Apple Arcade, and
12 GameClub is available in the App Store today, correct?

13 You agree with that.

14 A. Yes.

15 Q. You take --

16 A. I'm sorry. I -- it's -- I mean, I didn't perform a full
17 analysis of the substitution between the two, but, you know,
18 at a high level, yes.

19 Q. Okay.

20 But in your deposition, you agreed that GameClub competes
21 directly with Apple Arcade.

22 You remember that?

23 A. Yes.

24 Q. Okay.

25 You do take issue, however, with the requirement that each

1 game be individually downloaded, which you refer to as a
2 friction.

3 That's true.

4 **A.** Correct.

5 **Q.** Okay.

6 So first of all, are you aware that Apple Arcade, Apple's
7 competing product, also requires individual download?

8 **A.** I'm -- I'm sorry. You're -- you're asking whether Apple
9 Arcade's -- sorry.

10 Can you restate the question?

11 **Q.** I'm happy to. It was, I'm sure, poorly formed.

12 So Apple has a competing product called Apple Arcade?

13 **A.** Yes.

14 **Q.** And you're aware that Apple Arcade also requires
15 individual download of games.

16 **A.** So -- yes.

17 **Q.** And your testimony is that there are unnecessary frictions
18 because there might be large incremental costs between one
19 click and two clicks, correct?

20 **A.** Yes.

21 **Q.** Right.

22 But you've done nothing to measure what the cost might be
23 of those frictions that you've described, correct?

24 **A.** Not specifically for the purpose of this case.

25 **Q.** There's some measurement that you did that you didn't

1 include?

2 **A.** I guess if the question is, you know, have I ever measured
3 frictions from -- from clicks or other types of frictions
4 in -- in my research or in my industry experience, you know,
5 yes, I have.

6 But I didn't perform that specifically for this case.

7 **Q.** Okay. So you agree that they're not part of your
8 testimony.

9 **A.** I agree with that. Yes.

10 **Q.** Okay.

11 And at the time that you submitted your report and by the
12 time of your deposition, you hadn't ever used GameClub,
13 correct?

14 **A.** No, I've not used GameClub.

15 **Q.** Okay.

16 So I'm going to ask Mr. Spalding to pull up on the screen
17 GameClub.

18 (Demonstrative published.)

19 **BY MS. DUNN:**

20 **Q.** And we found a game in here that we thought looked good.
21 It's called Hatch. And I'm going to ask Mr. Spalding to click
22 on it within GameClub. So if he clicks "play now," we go --
23 what happens is -- that's the -- the "play now" is what you
24 click, and then you're directed in the App Store to the app
25 for Hatch so that you can individually download it.

1 Do you see that?

2 **A.** Yes.

3 **Q.** All right.

4 And I want to talk to you, Dr. Athey, just for a few
5 minutes about this screen that you see when you -- when you
6 click to individually download.

7 So you can see a page from the App Store pops up. And
8 then at the top, there's information for the users about
9 ratings, about what age the app is appropriate for. Here it
10 says "four plus." What kind of game it is. Here it says it's
11 simulation game. Who the developer is.

12 And if Mr. Spalding scrolls to the right, we'll see -- you
13 can also see what language it's in and how much size it's
14 going to take up on your device.

15 Do you see that?

16 (Demonstrative published.)

17 **THE WITNESS:** Yes.

18 **BY MS. DUNN:**

19 **Q.** Okay. And if you scroll down, you can see if there's
20 something new in the game. You can see a preview. You can
21 see the actual ratings and reviews. There's a section on app
22 privacy, and -- and this is common to apps in the App Store,
23 where it tells you what privacy issues might be implicated by
24 the app.

25 If you scroll down, Mr. Spalding, you can see that there's

1 other information that's listed, including the seller of the
2 game, the size, the category, compatibility -- this says it
3 works on the iPhone -- again languages, the age rating,
4 whether in-app purchase is involved, what's the status of the
5 copyright.

6 (Demonstrative published.)

7 **BY MS. DUNN:**

8 **Q.** There's even a link for the developer website which you
9 can click and it would go there, and then privacy policy.

10 And at the bottom, you can see if there are more games by
11 that developer.

12 Do you see all of that?

13 **A.** Yes.

14 **Q.** Okay.

15 And you would agree with me, I presume, that there may be
16 a benefit to users in receiving this information, like for
17 example, whether the game is appropriate for ages four and up,
18 correct?

19 **A.** (Reviewing document.)

20 So if -- if you're asking is -- about the way in which
21 this information is presented, I think there can be many ways
22 to make sure that users have this information. The
23 information itself is useful as -- as far as -- as far as I
24 know.

25 **Q.** Right.

1 I -- I'm not -- I -- that's fair. I'm not asking you
2 whether there's a different way to do it or a way you might
3 prefer. I'm just asking whether you can acknowledge that
4 there's a benefit to users in being able to receive this
5 information.

6 **A.** Receiving the information is -- is, from my -- from my
7 knowledge, these -- this kind of information would be valuable
8 to consumers, and having it well organized and -- and -- would
9 also be something that users might value; although I haven't
10 specifically analyzed, you know, individual pieces of this
11 information.

12 **Q.** Right. And I appreciate that.

13 And I think you also might acknowledge that this also
14 enables the developer to advertise other features to talk
15 about other games it has and to convey information to the
16 user.

17 You would agree with that, correct?

18 **A.** So I think the -- there's constraints on the -- here on
19 the way that the developer provides that information. But the
20 screen includes that information in -- in this case.

21 **Q.** Including a link to the develop -- developer's own
22 website, correct?

23 You saw that part.

24 **A.** Yes.

25 **Q.** Okay.

1 All right. Dr. Athey, your opinion is critical on
2 restrictions to interoperability.

3 (Simultaneous colloquy.)

4 **BY MS. DUNN:**

5 **Q.** Strike that.

6 Your opinion is critical of restrictions on
7 interoperability.

8 **A.** That -- that's a broad statement, but the -- so I -- I'm
9 not -- I haven't said that operating systems need to be the
10 theme if -- if that's what you're asking.

11 But there are certain types of interoperability that would
12 be beneficial.

13 **Q.** Okay. So you say the inability to mix and match across
14 devices with different operating systems because of limited
15 interoperability and synchronization of apps and services
16 creates what I call an app barrier to mixing and matching,
17 correct?

18 **A.** Yes.

19 **Q.** And that seems critical of restrictions on
20 interoperability, does it not?

21 **A.** Yes.

22 **Q.** All right.

23 And in your written testimony, you've said users do not
24 benefit from frictions to switching.

25 Do you remember that sentence in your written testimony?

1 **A.** Yes.

2 **Q.** At paragraph 52.

3 **A.** Okay.

4 **Q.** Okay.

5 And that's not a qualified statement you make in paragraph
6 52, which I can show to you.

7 **A.** So the -- the sentence is in the context of the -- of the
8 setting that I'm describing.

9 **Q.** All right.

10 So you disagree, Dr. Athey, that technical --
11 technological incompatibilities can increase competition by
12 providing consumers a choice.

13 **A.** So that's a -- to -- to state -- to state the proposition
14 would be that consumers can be offered choices of -- between
15 different technologies, and having different technologies is a
16 potential benefit for consumers.

17 **Q.** We definitely agree on that.

18 My question is whether you disagree with that
19 technological incompatibilities can increase competition by
20 providing consumers a choice.

21 **A.** So a sentence like that would need to be taken in context.

22 So are you talking about incompatibility for its own sake
23 so the -- the phrasing of the sentence says "by providing
24 consumers a choice," which I think implies that there's
25 something that the consumer would choose, that there would --

1 something that they would value?

2 So, again, I -- I think if I was trying to -- that's not a
3 very precisely worded sentence without context around it,
4 but -- but I think I answered your question.

5 **Q.** Sort of.

6 So what I'm saying is technological incompatibilities can
7 increase competition because they give consumers a choice.

8 Do you agree with that?

9 **A.** I guess with the word "can" would -- could -- would refer
10 to the context in which a sentence like that is being stated,
11 so yes.

12 **Q.** All right.

13 In your opinion, a failure to provide interoperability
14 could be illegal conduct. That's your opinion.

15 **A.** There are situations -- and -- and my understanding is
16 there are -- have been situations where a dominant firm has
17 been found to engage in illegal conduct around issues of
18 interoperability.

19 **Q.** Right.

20 And it's your opinion that forced interoperability could
21 be a remedy in some antitrust cases, correct?

22 **A.** I want to make sure we're clear on the term
23 "interoperability," but --

24 **THE COURT:** Mr. Even, if you have an objection, just
25 say it "objection."

1 **MR. EVEN:** Okay, Your Honor.

2 **THE COURT:** Because Ms. Dunn isn't looking behind
3 herself and she can't see you standing.

4 **MR. EVEN:** I will do, Your Honor. I was just trying
5 not to interrupt Ms. Dunn, but I do want to lodge an objection
6 that I think we're venturing far into legal opinion realm.

7 **THE COURT:** Okay. So -- and the other thing is if
8 you don't object after the question, then the witness is going
9 to answer. So I can see you standing, but you need to object.

10 I certainly am not taking her testimony as legal opinion.

11 I don't know what the point of this, Ms. Dunn. So if you
12 can rephrase with the point.

13 **MS. DUNN:** Sure. This was a discussion that we had
14 with Dr. Athey in her deposition about forced
15 interoperability, so I -- mainly just trying to discuss that
16 with Dr. Athey.

17 **Q.** And I guess my -- my only question here is whether it is
18 your view that forced interoperability should be a remedy in
19 this case?

20 **MR. EVEN:** Same objection, Your Honor.

21 **THE COURT:** Well, have you expressed an opinion on
22 forced interoperability?

23 **THE WITNESS:** So I -- that --

24 **THE COURT:** I just want to know, have you expressed
25 an opinion?

1 **THE WITNESS:** No.

2 **THE COURT:** Okay.

3 **THE WITNESS:** It -- well, let me make sure I -- can I
4 understand the question? So my -- in my -- my summary of
5 opinions does not -- does not use the term "forced
6 interoperability."

7 I'm trying to understand, you know, the -- the question
8 and the -- the bounds of the term which would be important to
9 be precise.

10 So my opinion, which I tried to state clearly, was about
11 restrictions on middleware. And so removing those
12 restrictions would be, in my opinion, beneficial for consumers
13 and developers. So that -- my -- my opinion was about how
14 changing restrictions would affect consumers and -- and
15 developers.

16 **BY MS. DUNN:**

17 **Q.** Right.

18 And my question is since you used the word
19 "interoperability" throughout your report and your testimony,
20 whether you understand that what Epic is asking for in this
21 case is for Apple to make its products interoperable.

22 **A.** So, again, when I'm using the term "interoperability," I'm
23 using it in the context of a specific restriction or the
24 specific experiences of -- of a consumer, so I'm -- I'm
25 concerned with the -- the breadth of your language, that it --

1 it -- you know, am I saying that the -- you know, is
2 everything about Android the same as everything about the
3 iPhone, or would -- should it be that apps that run on Android
4 also run on iPhone.

5 So there's -- you know, without more context and
6 specificity, that term could be -- you know, saying you should
7 have forced interoperability could be interpreted in a lot of
8 different ways. So I've tried to be specific about what kinds
9 of interoperability would be beneficial. And I gave specific
10 examples of those, which I could give again if you -- if it's
11 not clear.

12 **Q.** No. That's unnecessary.

13 Your Honor, I pass the witness.

14 **THE COURT:** Redirect.

15 **REDIRECT EXAMINATION**

16 **BY MR. EVEN:**

17 **Q.** Good morning, Professor Athey.

18 **A.** Good morning.

19 **Q.** I want to ask you a few questions about some of the
20 questions that Ms. Dunn presented today and yesterday.

21 And let's start with the last point about
22 interoperability. Have you given any opinions in your reports
23 or in your direct about any duty on Apple to make any of its
24 own software available on Android, for instance?

25 **A.** No.

1 Q. Ms. Dunn asked you some questions about something called
2 GameClub.

3 Do you remember that?

4 A. Yes.

5 Q. And she said GameClub is available now on the iOS?

6 A. Yes.

7 Q. Do you remember from your report whether GameClub's entry
8 into iOS was smooth?

9 A. No. In my report, I mention that GameClub's application

10 to the App store was rejected more than 100 times.

11 Q. And can GameClub under Apple's current restrictions offer
12 any and all games?

13 A. No.

14 Q. What kind of games can GameClub offer?

15 A. So GameClub needs to have an exclusive license to its
16 games, and so it -- it can't offer -- the restrictions
17 preclude third-party games, so there -- these are contractual
18 restrictions not related to the -- you know, the game itself
19 but whether the game developer has a contract with someone
20 else.

21 Q. Turning to Steam, you mentioned Steam on your direct
22 testimony as a -- an example of a cross-platform app store,
23 correct?

24 A. Yes.

25 Q. And if I remember correctly, you pointed out that it's

1 something that you can download apps on to one operating
2 system and then port them to another operating system, right?

3 **A.** That -- the -- that -- what the -- want to be careful with
4 the word "port," but as a user, you can -- say, if you switch
5 from a Mac to a PC or from a PC to the Mac, it facilitates
6 your downloading the game on whichever -- either platform and
7 playing it on that platform.

8 **Q.** And you mentioned yesterday that you can do that as a
9 one-stop shop through something like Steam, correct?

10 **A.** Correct.

11 **Q.** And Ms. Dunn showed you the Steam app on iOS. Can you
12 download iOS games through the Steam app?

13 **A.** On the iOS, no.

14 **Q.** Can you download Android games through the Steam store
15 through the app on Android?

16 **A.** No.

17 **Q.** And Ms. Dunn also asked you a few questions about Steam
18 Link, which allows you to, as we put it, stream games on to
19 your mobile device.

20 Where is this streaming from?

21 **A.** From your PC.

22 **Q.** And so you would need both the PC running the game and
23 your phone?

24 **A.** Correct.

25 **Q.** Want to turn to a couple of things that you were asked

1 yesterday.

2 You were asked a few questions about your work for
3 Microsoft.

4 Do you remember that?

5 **A.** Yes.

6 **Q.** And you remember that counsel for Apple asked you even
7 though it was your relationship with Microsoft that prevented
8 you from looking at Apple's confidential documents, you didn't
9 think you should disclose that on your C.V.

10 Do you remember being asked that question?

11 **A.** Yes.

12 **Q.** And you said yesterday that what prevented you from
13 looking at Apple's confidential documents was what you
14 referred to as a W2 work for Microsoft.

15 Do you recall that?

16 **A.** Yes.

17 **Q.** And by "W2," I -- I assume you meant that you were an
18 employee of Microsoft, correct?

19 **A.** Correct.

20 **Q.** When were you an actual employee of Microsoft?

21 **A.** So the employment relationship comes through the Microsoft
22 research visiting researcher program, which is something like
23 if you take a leave of absence from your university or you
24 spend more than a certain amount of time with Microsoft
25 research, then you -- it becomes a employment relationship.

1 And so I had that relationship in 2008 and in one other
2 subsequent period. I believe in 2011 or 2012.

3 **Q.** And was your employment for Microsoft or your relationship
4 with Microsoft in 2008 and 2011 disclosed on your C.V. in this
5 case?

6 **A.** Yes.

7 **Q.** Are you presently engaged by Microsoft on any antitrust
8 matter?

9 **A.** No.

10 **Q.** Did you seek permission from Microsoft to serve as an
11 expert in this case?

12 **A.** No.

13 **Q.** Did anyone at Microsoft ask you to serve as an expert in
14 this case?

15 **A.** No.

16 **Q.** Did you get any direction from Microsoft about any of the
17 opinions you voiced in this case?

18 **A.** No.

19 **Q.** Has Microsoft been your primary consulting client in
20 recent years?

21 **A.** No.

22 **Q.** When was the last time that Microsoft was your primary
23 consulting client?

24 **A.** It was scaling down during 2015, and so somewhere in that
25 range.

1 Q. As far as you know, did your engagement by Epic have
2 anything to do with Microsoft?

3 A. Not as far as I know.

4 Q. Ms. Dunn asked you some questions yesterday about your
5 potential review of hypothetical confidential Apple documents
6 that hypothetically said how many people switched from Android
7 iOS or vice versa.

8 You remember that?

9 A. Yes.

10 Q. Is there public data concerning switching between iOS and
11 Android?

12 A. Yes.

13 Q. And as a tech economist, platform economist, do you
14 generally keep abreast of the data about switching between
15 those two platforms?

16 A. Yes.

17 THE COURT: Is all of that evidence attached to your
18 report? That is, is it a part of the record in this case?

19 MR. EVEN: I'm sorry. Which data is that, Your
20 Honor?

21 THE COURT: What you just asked her about, the data
22 about switching between the platforms. Is that data that is
23 in the record in this case, Professor Athey?

24 THE WITNESS: I -- I don't want to misspeak, but I --

25 THE COURT: Well, and I just want to know what's in

1 the record.

2 **THE WITNESS:** I believe that Dr. Evans has
3 information.

4 **THE COURT:** Did you rely on Dr. Evans in establishing
5 your opinions?

6 **THE WITNESS:** I relied on Dr. Evans for the market
7 definition and for the -- the switching costs and the -- the
8 market power in both the -- the foremarket and the
9 aftermarket.

10 **THE COURT:** Did you review data and did you analyze
11 data?

12 **THE WITNESS:** I did not do original analysis of data.

13 **THE COURT:** And there's no data attached to your
14 report?

15 **THE WITNESS:** No -- no original data, no.

16 **THE COURT:** All right. Thank you.

17 **BY MR. EVEN:**

18 **Q.** You were also asked some questions about DX5612 and --
19 which talked about some bad news and good news about switching
20 between iOS and Android.

21 Do you remember that?

22 **A.** Yes.

23 **Q.** And in the good news, it said -- and I'm reading from
24 it -- "These days, most major productivity apps are readily
25 available on both platforms. And once you are all set up with

1 Android, all of your apps and app data will automatically sync
2 with Google servers and follow you to any future Android
3 devices."

4 Do you see that?

5 **A.** Yes.

6 **Q.** Is that good news about the transfer from iOS to Android?

7 **A.** No.

8 **Q.** What is this good news about?

9 **A.** The -- it's speaking about following between Android
10 devices. So good news for switching among Android devices.

11 **Q.** You were also asked by Ms. Dunn about some -- an article
12 from *The Guardian* that you cited in your report.

13 Correct?

14 **A.** Yes.

15 **Q.** So I'm putting up on the screen the relevant portion that
16 counsel for Apple directed you to. And it's on page 3.

17 (Exhibit published.)

18 **BY MR. EVEN:**

19 **Q.** And you recall that counsel for Apple asked you some
20 questions suggesting that you omitted the parts that are bad
21 for you in this -- in the article?

22 **A.** Yes.

23 **Q.** And specifically, counsel for Apple pointed you to the
24 stuff that says that piracy on Android is a fact, correct?

25 **A.** Yes.

1 Q. So I'd like to maybe scroll down a little bit to the
2 points that Ms. Dunn did not show you.

3 (Exhibit published.)

4 **BY MR. EVEN:**

5 Q. And do you see that after they say that piracy on Android
6 is a fact, they say, yet, a, piracy is also a fact of the life
7 on iOS through some elements of its jail-breaking community;
8 b, it's always difficult to work out how many pirates
9 represent generally low sales would they have bought the app
10 otherwise; and, c, if an app is free of premium, then piracy
11 is much less of a headache.

12 Do you see that?

13 A. Yes.

14 Q. And then the article goes on to say only Android user less
15 keen -- sorry -- on the Android user-less-keen-to-pay point,
16 it's true that iOS is still more lucrative for developers.
17 Apple has paid out more than ten billion to its developers
18 while Google hasn't given comparable figures.

19 Do you see that?

20 A. Yes.

21 Q. Does the article reach a definitive conclusion about the
22 point for which you cited it, which was the point about users
23 paying more on iOS?

24 A. Yes. The article is consistent with the -- the -- the
25 point that -- that developers make more on -- on iOS.

1 Q. And does the article reach a definitive conclusion that
2 Android piracy is a deterrent more so than iOS piracy?

3 A. I think it's suggesting that -- that piracy may be more
4 common, but also that because, you know, people who have less
5 money to spend might be substituting between piracy and not
6 using the game at all rather than piracy for -- for paying.
7 That's my -- my interpretation of this?

8 So although piracy may be more common, it doesn't
9 necessarily mean that fixing the piracy would make the
10 developers earn more. But that's -- in any case, that's --
11 that -- the point that I cited them about was that -- that iOS
12 developers often develop first on iOS, but also most of them
13 eventually go to Google, too, which is, you know, all
14 consistent with this.

15 Q. Okay.

16 You were asked some questions yesterday about whether
17 Apple would need to undertake any technical redesign efforts
18 for middleware to run on iOS, correct?

19 A. Correct.

20 Q. And one of the middleware instances you were talking about
21 were streaming services, correct?

22 A. Yes.

23 Q. And you testified yesterday that you reviewed Microsoft
24 trial testimony concerning streaming, correct?

25 A. Yes.

1 Q. And that you reviewed Nvidia's testimony on the topic of
2 streaming, correct?

3 MS. DUNN: Objection. I think mischaracterizes the
4 record.

5 THE COURT: Sustained. I think you -- you said you
6 didn't listen to the testimony. But did you read something
7 else?

8 THE WITNESS: I --

9 THE COURT: What is it that -- let's just get the
10 record clear.

11 THE WITNESS: Sorry.

12 MR. EVEN: I think, Your Honor, what --

13 THE COURT: Just let -- she can answer.

14 BY MR. EVEN:

15 Q. Go ahead.

16 THE COURT: Was it Nvid- -- did you read the
17 testimony or something else?

18 THE WITNESS: I read selections of testimony that
19 related to streaming.

20 THE COURT: Okay. For Microsoft and Nvidia.

21 THE WITNESS: Yes.

22 THE COURT: Okay.

23 BY MR. EVEN:

24 Q. And based on your review of that testimony, do you have an
25 understanding whether technical design changes would need to

1 be done in iOS to support app streaming?

2 **A.** My understanding was that these witnesses said that
3 technical design changes would not be needed, that -- I
4 believed that, you know, one of the apps accepted and --
5 and -- from Nvidia and then taken down, so --

6 **MR. EVEN:** Thank you, Professor Athey. I have no
7 further questions.

8 **THE WITNESS:** Thank you.

9 **THE COURT:** Any recross on those seven topics?

10 **MS. DUNN:** No re-cross, Your Honor. Thank you.

11 **THE COURT:** All right. Professor, you're excused.
12 Thank you.

13 If counsel will come and get those binders.

14 Next witness.

15 (Off-the-record discussion.)

16 **THE COURT:** Ms. Forrest, next witness.

17 **MS. FORREST:** Yes. Your Honor, we now turn to some
18 of the economists from the Apple side.

19 **THE COURT:** Okay. Thank you.

20 **MR. SWANSON:** Your Honor, as our next witness --
21 perhaps our first witness, we're calling Professor Richard
22 Schmalensee.

23 **THE COURT:** You need to identify yourself for the
24 record.

25 **MR. SWANSON:** Dan Swanson for Apple, Your Honor.